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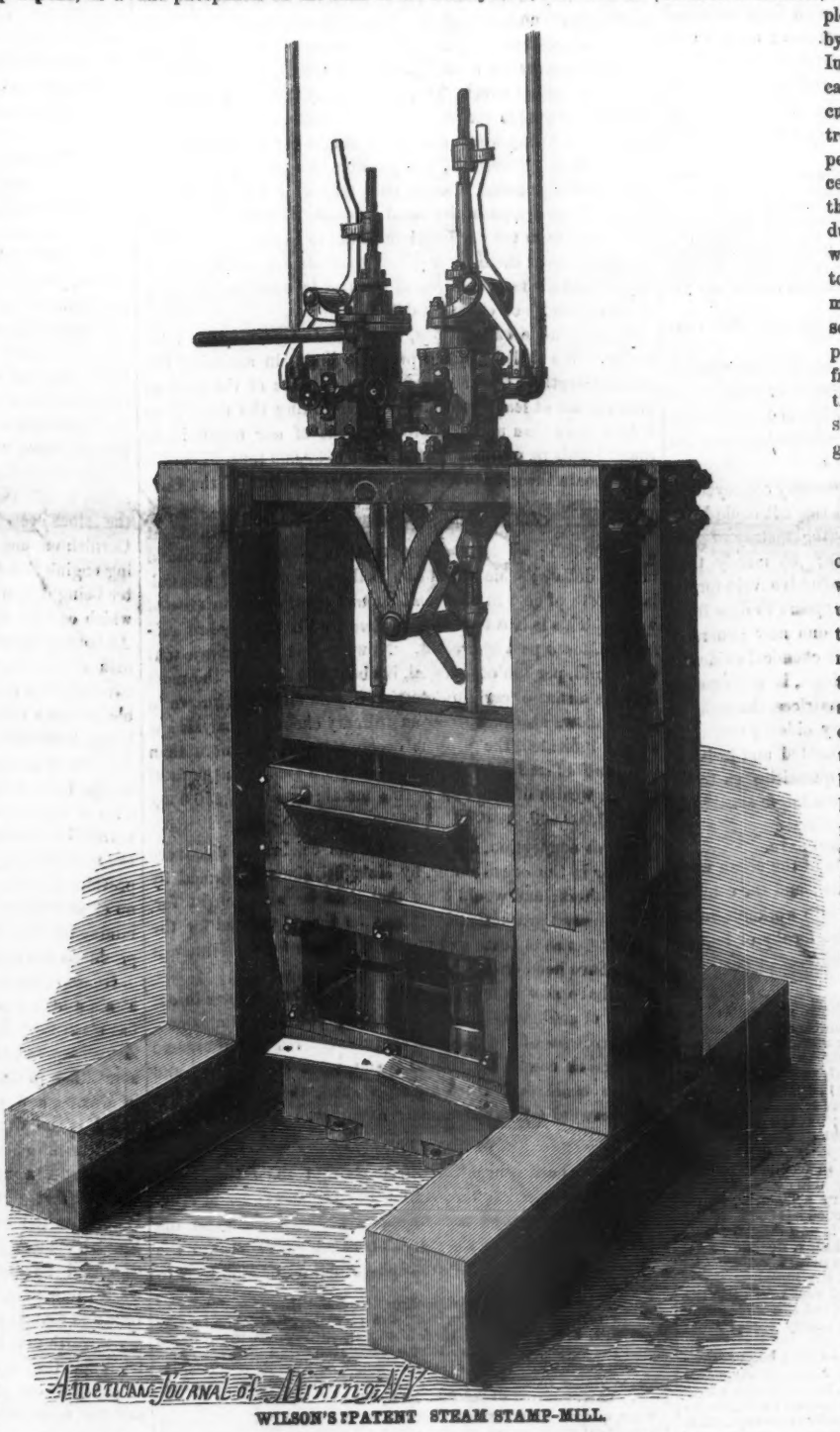
WILSON'S PATENT STEAM STAMP-MILL.

This stamp-mill is presented to the public for consideration as an apparatus for the crushing of metalliferous ores, which, for efficiency, economy, durability, and facility of transportation and erection, has not hitherto been equaled. The subjoined cut is from a photograph of the mill, and can readily be understood by any person of ordinary mechanical acquirements. It works automatically, and requires no skill to run it, it being only necessary, in order to put the stamp in motion, to turn the valve admitting steam to the cylinders. The force and velocity of the blows of the stamp depend, in a measure, on the pressure of the steam. As the upper side of the piston has an area of about fourteen square inches, if a pressure of fifty pounds of steam per square inch be used, the steam pressure downward would be seven hundred pounds, to which add three hundred pounds for weight of stamp. This will give a blow of one thousand pounds; and by increasing the steam pressure, the blow may be made proportionally stronger. But should a light, quick stroke be required, for the crushing of cement and decomposed ores, by adjusting the cams (the work of a moment,) a blow of a few pounds' force, and of great velocity, can be obtained. Either stamp can be used independent of the other, by simply shutting off the steam from the one not required to run. It will be seen by the cut that the valve-levers and cams are so contrived, by a simple and easily-understood arrangement, that there can be no severe wear, and that they can be easily replaced by an ordinary blacksmith in case of breakage. The cams that move the valve-levers are all adjustable on the screw that holds them on the stamp stem, giving the operator absolute control over the force, length and velocity of the stroke of the stamps. The speed of the stamps is intended to be about two hundred blows for each stamp per minute, but they can be run at a greater or less speed as required; and as the stamps strike on the foundation, and *not on the mill*, there can be no strain on the frame, which is simply placed on the foundation, and held in position by wooden pins. The steam is entirely cut off before the stamp strikes the ore, and thus all unnecessary strain is removed from the stamp stems. The ease with which this mill can be transported from place to place, the facility with which it may be put into operation, and its low cost, bringing it within the reach of miners of quite limited means, entitle it to consideration. Miners and persons interested in mining operations are requested to examine this mill, at Cresson & Smith's machine works, corner of Eighteenth and Hamilton streets, Philadelphia. For further particulars, call or address Wilson Patent Steam Stamp-Mill Co., 326 Walnut street, Philadelphia.



WILSON'S PATENT STEAM STAMP-MILL.

Natural Resources Found in South Carolina.

Few know the vast wealth which lies undeveloped in South Carolina, and one of the advantages which the changed condition of things must bring to us is the development of these sources of wealth. The iron ore of Spartanburg is well known to be the finest in the United States. Our entire up-country abounds with iron and gold, and when we get into the Blue Ridge Mountains, lead and copper are found in abundance. Coming lower down she country, we find deposits which are now being more or less developed. The entire region of country drained by Horse Creek and its tributaries possesses inexhaustible deposits of the finest kaolin, burr-stone, and ochre of all colors, from the deepest red to the lightest green. The pure kaolin of this region is now in great demand, and those engaged in the business are not able to furnish all that is wanted; while the price at which it is sold in the North leaves, we are informed, a very large profit to those owning the works. The South Carolina Porcelain Manufacturing Company are now the largest shippers of kaolin, though several other parties are engaged in the trade. A few casks of it were sent to England and France last summer to be made up into crockery, and the samples of ware which have been returned to the shipper are very beautiful. Another of the natural resources of the State is the immense deposit of bone and phosphates on the bank of the Ashley river, near Charleston. That such means of wealth should have remained so long undeveloped is a reproach to us as a people. The United States is now supplied with mill-stones and with ochre from France, and for these two articles alone we pay to France yearly over four millions in gold, and yet we have both articles in great quantity, and of equal, if not superior quality, on Horse Creek. The South has vast resources, and if we would only use them properly, we need not fear for the future. The time will come when these resources will be more fully developed.—*Charleston Mercury.*

The Preservation of Wood.

Petroleum is enthusiastically praised by some as an agent for preserving wood, but, writes a correspondent, before that or any other agent can be applied with good results, the wood must be prepared for its reception, by being throughly dessicated, after which it may be impregnated, with oily and resinous products by any convenient method. Simply soaking it would only partially effect the desired result. At the Paris Exposition there were samples of wood used in the construction of the chain pier at Edinburgh, which had been treated with a solution of creosote, that were perfectly sound, while other samples, not so treated, were quite destroyed by insects and the action of the elements. In order to test as far as possible the efficacy of similar treatment, the writer procured specimens of hemlock from growing trees, and first subjected them to a temperature of 250° until they had lost 45 per cent. in weight, and afterward exposed them to creosotish or smoky vapors produced from wood tar. The effect on the wood was marked. Its color was changed to a dark brown; its fibres were knitted more closely together; the blocks were somewhat reduced in size, and had the appearance of solid wood. If we may judge from experiments made in Europe, wood thus prepared will resist the attacks of insects and the action of the elements for a great length of time.

Wooden Railroads.

The earliest form of railway consisted of wooden rails laid on cross-ties. When well constructed, there is no doubt of their utility and success. During the late war the Confederates were often obliged to make use of wooden rails, and over them they transported thousands of tons of army supplies and soldiers. A much higher rate of speed may be obtained on wooden roads than is generally supposed. If properly built, a speed of fifteen or twenty miles an hour may be safely attained, which is as much, or more, than is realized on some iron roads rated as first-class, but too often, in reality, rotten and unsafe concerns. One of the requisites for the successful working of wooden railways is that the locomotive shall be light, and also the loads carried. Good broad-faced wheels are also essential. Such roads are considerably cheaper than plank roads in first construction, and also in maintenance. Wooden railroads can be constructed in some localities for the sum of $1000 a mile. The exhibition of a very little united spirit and energy among country neighbors would put their towns and villages in railroad communication with the principal through lines of travel. Our attention has been called to this subject by reading the accounts of a projected wooden railway from Carthage, N. Y., to Harrisville, a dastance of 47½ miles. The rails are to be of maple, strongly wedged into heavy cross ties, and the expense of the construction, all complete, is estimated per mile, as shown by the following figures:

1,760 ties, delivered at ten cents	$176 00
21,120 feet B. M. maple rails, delivered at $15	316 80
Wedges delivered, say	40 00
Notchings, ties and track laying	467 20
Total	$1,000 00

The solid maple rail, 4x6 inches, wedged edgewise every three feet into heavy notched ties, forms a track equal in strength to that of any other railroad, and is capable of bearing heavy rolling stock, provided the wheels have a rim five inches in width. Fine sand and dust, which get on the rail, is soon crushed into the wood by the car wheels, and forms a

hard and gritty surface, which does not wear, and greatly facilitates the traction. The maple rail, if sound, will last a number of years. A good deal of interest—we might say excitement—is now going on in Jefferson county, N. Y., concerning these wooden roads. Mr. J. B. Hulburt enjoys the credit of being the projector and engineer. A short road of this kind, built by him, six miles long, has been successfully used for eight years. He is now constructing a wooden railroad twenty-two miles long, to connect the Clinton iron mines with the Otwegatchie railroad. Sixteen miles of the new road are nearly completed, and a portion is in actual operation.—*Scientific American.*

Original Papers.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

ON A THEORY OF GOLD GENESIS,

Being the Substance of a Memoir read to the AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, at the Buffalo meeting, August 1, 1866.

BY PROFESSOR HENRY WURTZ.

Continued from Vol. IV. Page 354.

III.—GOLD-GENETIC METAMORPHISM.

As I have before remarked, any general discussion, even approximately complete, of the vast and complex subjects of Metamorphism and Vein-Genesis, would carry us far beyond our necessary limits; which must be confined, as narrowly as practicable, to such considerations and indications upon these topics as relate most directly to our special objects.

Hitherto our attention has been confined to the primary era of original deposition of the sediments, with their contained sulphides and gold, from the oceanic menstruum; we now pass on to the secondary era of their subsequent metamorphosis, which has brought them into the forms and conditions now known to us. I shall enter upon this stage of our subject by quoting briefly from our great classic American work on Geology:

"By the close of the Palæozoic, nine-tenths of all the rocks of the globe had been formed. During the epoch of revolution that followed, these beds, besides undergoing in many regions an extensive crystallization, fitting them prospectively for the uses of art, were also supplied with mineral wealth. Much of the gold of the world comes originally from rocks which were metamorphosed and filled with veins at this time. The same is believed to be true of platinum and diamonds. None of the precious metals are yet known to occur in the crystalline Azoic."*

On a previous page DANA says, also: "No gold has thus far been found in the Azoic."†

I hardly need point out here the correspondence between my views of the necessary agency of carbon of organic origin in the reduction of gold from oceanic solution and the induction from a broad view of general geological facts, presented as above by Professor DANA.

I must, however, demur to the sense apparently conveyed by a literal reading of the passage. I do not think it could have been intended to inculcate the idea that the history of gold can go no further back than the Zoic ages; but merely that the concentration or aggregation into productive vein-forms, of the rarer and more valuable metals, appears to date from thence. Whether this latter belief (the one now generally held) be justified in the future or not, still chemical evidence is very far from wanting that gold, at least, is universally, though sparingly diffused, in its mineral matrices, throughout all known crystalline rocks, even the very oldest; and that only in certain localities has it been eliminated and isolated by secondary action in such forms and quantities as to be brought within the reach of our present metallurgic art. This truth I shall put into the form of the following:

COROLLARY FROM THE SIXTH POSTULATE.

The sulphides of the earliest sediments of the ocean were approximately uniform in their gold-contents; and the concentration or collection of the precious metal into workable veins and deposits results from later agencies, but locally or temporarily brought into action.

Multitudes of analytical results might be cited, to show the wide diffusion of gold, in minute proportion, at least, throughout the sulphides of all rocks, not only all those of the Palæozoic ages, direct derivations from the ruins of the earlier formations we are now treating of, but also in these earlier formations themselves, and in far later rocks likewise.* The general acceptance of this as a fact, among chemists, is such that I shall at present be content with pointing out that it was the positive conclusion of the illustrious Swedish chemist GAHN† (the discoverer of manganese and the preceptor of BERZELIUS); whose native Scandinavia may be said to be wholly composed of these so-called "hypozoic" crystalline schists, and other rocks of primeval origin; and to be, moreover, a country nearly or quite destitute of known deposits of gold in any workable or available forms of concentration.‡

If there be still geologists who will be disposed to dispute the probability of any general deposition of gold with the primeval sediments, and to hold that the oceanic gold remained in solution to be deposited first during those later epochs, with whose formations we have so far found the precious metal to be chiefly associated, it is incumbent on them to show good and sufficient reasons how and why this was, and what could have constituted the important difference in conditions that caused the prevention of deposition, and retention in solution of the gold. My own theory, involving the dependence of gold-genesis upon antecedent organic life, would, a few years ago, have furnished them the very argument required; but the discovery of the eozoon, and the recognition of the palæotrochis, have undermined this ground of argument.

It is scarce necessary for me to suggest that the existence of gold, usually in barely detectible traces, in the primary sulphides has no adverse bearing upon my theory; as the total quantity of gold in the earth's crust doubtless bears some such proportion to the whole mass as a single grain of sand upon the seashore. Moreover, it is possible that a very important share of the primeval oceanic gold may still be held in solution. If we suppose the total probable amount of gold yet eliminated from the earth by human toil to be diffused throughout the present ocean, it would, without doubt, be enormously beyond the limits of our present (it must be admitted, not very delicate) modes of chemical detection.

A few simple calculations, to illustrate this, may be interesting. We shall be within probable limits in assuming the average depth of the 150,000,000 square miles of the present ocean to be at least two miles. Then taking the density as 1-40th more than unity, the total weight of our ocean is, in round numbers, over 1,400,000,000,000,000,000 tons. Now, if we estimate the gold in human hands, at the date of the California discovery, at as much as $2,000,000,000; and the annual average, during the eighteen years since then, at $170,000,000; we have a sum total of about five thousand million dollars; which would be in the proportion of one dollar's worth of gold in *two hundred and eighty million tons* of water. This is less than the *one hundred and sixty-two million millionth* part by weight. Now, as it is well known that $1 in gold, per ton of material, is about the limit of the most delicate means of certain detection of this metal yet known to us, it follows also that so far as ordinary chemical analysis has as yet indicated, the present ocean may contain more than *two hundred and fifty million* times more gold than the total present wealth of mankind in this metal; or say $1,250,000,000,000,000,000.

In this connection, I would recall the celebrated discovery of silver in the ocean water, by Malaguti, since confirmed by many others; and would urge that gold be also sought for, with renewed precautions. It may be that if we had for the latter, tests as delicate and characteristic as for the former, it would have been already detected.

We have now at length fully arrived at that chapter in our history of gold-genesis where my own peculiar and fundamental hypotheses of the essential agencies of ferric and of organic solutions in conducing to the result, must be called in, and may be made fully intelligible. I shall, therefore, at once bring forward my next postulate, as follows:

SEVENTH POSTULATE.

Gold has been concentrated from its first general diffusion in minute proportion throughout the sediments, by alternations of oxidizing and reducing action, dependent upon the alternations of level of the district between elevation into the oxidizing medium of the atmosphere and depression near to or beneath the ocean-level—the iron sulphides being thus first partially leached out of the heated mass by oxigeniferous waters of atmospheric origin, and collected as auriferous solutions of ferric sulphates in the cavities and fissures produced by contraction during crystallization; and then reduced again by organic solutions (similarly and simultaneously leached into the same cavities) to sulphides, these sulphides being necessarily richer in gold than the first — the superficial portion, thus impoverished and decomposed during elevation, being eroded and removed by oceanic agency during depression, leaving a new heated surface for renewed and deeper lixiviation and oxidation upon subsequent elevation.

TO BE CONTINUED.

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* DANA'S Manual of Geology, page 413.

† Ibid. page 139. We have here one of those generalizations which exhibit and illustrate that kind of prophetic instinct born of true and profound scientific research; and we may class it with the now famous words of the same scientist, foreshadowing the discovery of the California gold-field (written in 1841, and to be found in the Report of the Wilkes Exploring Expedition): "The talcose and allied rocks of the Umpqua and Shasty districts resemble in many parts the gold-bearing rocks of other regions; but the gold, if any there be, remains to be discovered." Almost at the same time that gold-bearing veins are found in the supposed Azoic Laurentian schists (as in the new Madoc gold field in Western Canada) Professors DAWSON and STERRY HUNT are engaged in demonstrating the highly fossiliferous character of these very schists. I would point out the interesting illustration here afforded of the rapid and substantial progress that geological discovery is now making. The publication of DANA'S work dates, as yet, but half a decade back; but our most fundamental ideas regarding the nature, origin, and mode of formation, as well as the character of the metallo-genetic metamorphism, of those enormous masses of rocks forming the nuclei of the American and other continents (and the undoubted basis and original source of all other sedimentary rocks) must already undergo a complete revolution.

The very oldest sediments being now known to have been associated with abundant organic life, and the real Azoic or Hypozoic ages thus thrown inconceivably further back, probably even into the chaotic times, before the genesis of ocean herself; and, moreover, as gold-genesis is shown also, by these recent developments, to have proceeded, even in these earliest sediments; we are constrained to believe that the same agencies now at work, and which my theory attempts to trace out and define, must have operated likewise in the gold-genesis of that first oceanic day. I must also point out that it should analogically follow that the energy and intensity of these changes was greater in those than in later days; and we should, probably, therefore, be prepared to find in the results of such changes, or in the character of the concentrations of the precious metal of that date, some corresponding degree of magnitude and intensity. Such an anticipation is far from being at necessary variance with the present lack of known gold-fields in primeval rocks; for it may be asserted that the majority of the most important discoveries heretofore vouchsafed to mankind have been long overlooked (though continually stumbled over) until actually *sought for* in the light afforded by previous discoveries; or until "the hour and the man" had both come. This assertion, indeed, is specially applicable to some discoveries of gold-fields already made.

* I may recal the recent detection of ponderable proportions of gold in tertiary clays underlying the city of Philadelphia by Mr. ECKFELDT, assayer in the U. S. Mint; amounting to three cents worth per cubic foot; from hich he calculated that this fifteen foot stratum of clay within the corporate limits of the city of Philadelphia, contains more than one thousand million dollars worth of gold. (Am. Journal of Science, xxii., 297.)

† As quoted in BISCHOF'S Lehrbruch, II., 2053: "Von letzerem (Eisenkies) giebt es *keinen*, der nicht bei genauer Prüfung Spuren von Gold zu erkennen gebe."

‡ It is hardly to be doubted now, however, that the bulk of those Scandinavian schists were formed within the Zoic times; and, therefore, by my theory, they may, nevertheless, possibly contain points of auriferous concentration yet to be discovered.

I have as yet heard of no question raised as to the Laurentian age of the rocks of Madoc, the locality of the recent surprising Canadian discoveries of gold veins. If these rocks are still held to belong to this most ancient of systems, little more need be said; as those who would deny the primary deposition, and the diffusion of gold throughout the first marine sediments, will then have to explain away first this positive evidence. The reports we have of the mode of occurrence of the gold at the "Richardson Mine," as associated with *lignite*, in a dolomitic gangue, are curious and anomalous, and I greatly desire further information. Should the rocks of the new gold-field turn out, nevertheless, to be of a later age, it will not in any way affect the arguments in the text above.

[WRITTEN FOR THE AMERICAN JOURNAL OF MINING.]

MINING AND METALLURGY IN MEXICO—I

A SKETCH OF THE SYSTEM OF WORKING MINES AND OF EXTRACTING THE PRECIOUS METALS FROM THEIR ORES, AS PRACTICED IN MEXICO.

By DAVID COGHLAN, Mining Engineer, Scranton, Pa.

At the present time, when the attention of the Americans is so much drawn towards Mexico, as a future field for investment and speculation, and as the mines of that country will probably and deservedly be the principal object of such enterprises, when the country shall have settled down a little from its long chronic state of anarchy, I think a slight sketch of the principal Mexican mining districts and methods of extraction, by one who has had fourteen years experience in the principal centres of production of the precious metals, will be of some interest to your readers.

The districts which produce two-thirds if not three-fourths of the total amount of silver are in the order of their importance.

1. ZACATECAS. 2. GUANAJUATO.
3. REAL DEL MONTE. 4. CATORCE.

The first is one of the oldest and most constant in production, the mines there having been worked by CORTEZ, and continuing, since the conquest, to produce seven or eight million dollars yearly. The number of lodes—all true fissure veins—is enormous, and probably not one-tenth of these have been worked at all extensively; though, of course, the most promising have been worked so deeply as sometimes to barely pay the expense of drainage and extraction. These mines being situated in low hills, not much above the level of the surrounding plains, are wet; and many could not have been, up to the present time, worked by the old system of horse-whims. Steam power has been introduced in some of the wet, deep mines within the last twenty-five years, but even yet most of the mines are worked by horse-power. When steam is used, Cornish engines are preferred, although in some cases a winding engine is used for the extraction of ore and water, the latter being drawn up in bags formed of two or three ox-hides, which contain from fourteen and twenty-two cwt. of water. Although the economy of fuel is greatly superior in the Cornish engine, the adaptability of the winding engine to the two purposes of extraction of water and ore, makes it preferable in mines not having a large quantity of water. The number of horse-whims employed in these mines, before the introduction of steam-power, was enormous—as much as seventy having been used for the draining of the FRESNILLO mines, each of which was worked by four relays of eight to twelve horses, being from two thousand to three thousand horses for the mere drainage and extraction of one series of mines! The prevailing formation is clay, slate and porphyry; but there are no cross courses. This may be considered the most reliable mining district of the country, though GUANAJUATO has often produced much more silver in a given time.

GUANAJUATO comes next in order, though the mines did not attain a high position till about a century ago. Since then, it has often for years at a time produced vastly more silver than ZACATECAS, but the richness of the mines has been more inconstant, than in the last mentioned district. The deepest mine in Mexico, and the one which has been the richest in the world, is the VALENCIANA, more than two thousand feet deep, which is estimated to have produced $250,000,000. It is on the VETA MADRE, which attains a width of from fifty to one hundred feet, and has been abandoned since the Revolution in 1810, with the exception of one period, about 1827, when an English company drained it with horse-whims, which operation used up eighteen thousand horses, and was concluded, when the winding engine sent out from England arrived. The vein was found at the bottom of the mine, of its usual enormous width, but though to the eye, the ores were of good appearance, they proved to have so little silver as to be unable to pay the cost of extraction from such an enormous depth; and the mine was consequently abandoned. I take this opportunity of saying, as a general observation, that silver occurs to a depth of four hundred or five hundred yards, but that, below that, it is seldom found in paying quantities. I should say myself, from my experience, that the richest part of the mines, as a general rule, is between a depth of one hundred and four hundred yards—though great riches are often found on the surface.

In this district, a calcareous shale is overlain by a conglomerate, which is again covered in places by masses of eruptive porphyry. I do not think there are any cross-courses. The lodes are not so numerous nor so easily distinguished on the surface as in the ZACATECAS district. Indeed the back of the

very rich vein of LA LUZ is not at all distinguishable on the surface, for three-fourths of the distance along which it is worked; and it only begins to give ore at a depth of about one hundred yards. It forms two ramifications, which unite at intervals, and again run off to considerable distance from each other. It is interesting to note that VETA MADRE runs on the course of a great fault, the position of the rocks being vastly different on the hanging and foot walls. The diameter of the shafts is probably unequalled. One is octagonal and thirty-six feet across. The VALENCIANA shaft, about two thousand feet deep, is thirty feet. These shafts are, when the ground is bad, sustained by masonry. Indeed, timbering would be almost impossible. Comparatively little wood is used in sustaining the workings, dry stone work, or masonry being mostly resorted to; and the want of skill of the timbermen being the cause of a great many accidents. In ZACATECAS, on the other hand, the operations of this kind are most excellent. The water being scanty in these mines, the use of steam engines is but seldom resorted to. Experience has taught the Mexican miners that the use of machinery should be avoided, wherever the water is not so overpowering in quantity as to make it necessary. This, in a country like the United States, may seem a foolhardy assertion; but anyone having had experience in such a region will recollect the scarcity of fuel, the cheapness of labor, horses and mules, the great delay and cost of freighting pumps and other machinery from Europe or the States, the high wages paid to engine-men, and the difficulty of repairs in case of accident. Last, not least, the uncertainties of silver mines make it doubtful whether, in the two years that it requires to order and put up an engine, the mine will be worth the expense and risk.

The general price of labor is $1 per day for miners and fifty to seventy-five cents a day to *peones*, who carry the ores and rubbish on their backs to the shaft. However in districts where what Cornish miners call "tribute work" (meaning that miners have a certain share of the ore) is adopted, they sometimes make enormous earnings, when their "pitch" gets rich; while they may work a long time without getting any adequate remuneration for their labor, before striking good ore. The other system in use is to pay the men $1 per day; when they go down under the orders of an overseer, who plans the holes, sees that the proper depth is given them, and sees the ore separated from the gangue after the blast. This is a bad system, except in a very rich mine, in which the small amount of work done is comparatively of little account, and the working of the vein can be kept under better control. The workings on the vein cannot be said to be carried on according to any regular system. The good indications of ore being more sought for than the regular working of the mine; and this often causes great additional expense in extraction and drainage by hand pumps, or in leather bags of water carried on the back. The shafts, cross-cuts and adits, however, are made in the most approved fashion, some of the latter rivalling in amplitude and length common railway tunnels. Adits are not much used in the ZACATECAS and GUANAJUATO districts, the formation of the ground not being favorable to them; but they receive their greatest development in CATORCE and REAL DEL MONTE.

The vein stone in the GUANAJUATO mines is the hardest I have met with, being almost pure quartz, often occurring in most beautiful crystals, which are sometimes sold as curiosities. The ore, roughly cleaned in the pitches, is carried in bags, weighing from 150 to 300 lbs., on men's backs, to the cross-cut, to be hoisted to the shaft. When hauled to the surface by the whim, it is re-cleaned and sorted for sale by women. The silver ores of GUANAJUATO contain a considerable quantity of gold, which rarely occurs in the other three districts. The method of separating this will be alluded to hereafter. The prevailing direction of the veins here, and indeed throughout the country, is about 30° north of west, dipping south in this district,—though north is the prevailing underlie in others. This underlie may be said to vary from the perpendicular to 40° with the horizon, seldom exceeding the latter; and in all the districts the veins that have been found valuable are true fissure veins, and have not given out at any depth attained.

I must caution the reader, however, against thinking the above direction of veins invariable. There are often notable contra-veins, such as LA LUZ, running north and south, and dipping west. The best ore is, as a rule, found near the upper wall of the vein. Works in the "country" (or rock surrounding the lode) are driven by what the Cornish miners call "Tut-work," at so much a yard, horizontal or perpendicular, as the case may be. In parts of the lode, not in ore, the works are generally carried on day and night.

Death of the Pioneer Gold Miner of California.

The death of Isaac Humphrey is announced at Victoria, on the 1st December. He was generally known as "Major," and is an important character in the history of California. He was a Georgian by birth, and had worked in the placers of that State before coming to this coast. When Marshall discovered gold at Sutter's Mill, now Coloma, on the 19th January, 1848, he declared that the metal was gold, but he could not prove it, his associates did not believe him, and his discovery had no influence. The men in the neighbourhood knew nothing about gold mining, and all, including Marshall, continued their labors on the mill and mill-race, and ordinary work, just as though there had been no gold in the neighborhood. Nevertheless, they would occasionally pick up bits of yellow metal in the race, and as these stood the test of Mrs. Weimer's soap kettle—the only test known at Sutter's Mill—the men began to feel uneasy, and two months and a half after the discovery one of them, named Bennet, came down to San Francisco with some specimens to post himself. He showed his little nuggets to some acquaintances, and one of them happened to know that Humphrey had been a gold miner, so Bennet was taken to him. A look satisfied the Georgian of the character of the metal, and when he was told that these lumps were picked up by men who were not miners, he declared that though there had been some rich diggings in his native State, there was no place there as rich as the race of Sutter's Mill. He determined to go thither at once, and tried to persuade some friends to accompany him, but failed, so he went alone. The morning after his arrival at the Mill in the first week of April, he went out with a shovel and pan and got several dollars in his first panful, and after trying a number of places and finding the gold everywhere, he made a rocker and sat down to work regularly, washing out the gold rapidly. Marshall and his friends saw how it was done, and in three days after Humphrey's arrival every occupation save gold mining was abandoned in that neighborhood, and men who had been glad to work a week before for a dollar a day were not content unless they were making thirty or forty dollars. The news spread, and California became famous and great, and $1,000,000,000 have flowed from the fountain that was discovered by Marshall, and opened by Humphrey.—*Alta California.*

Mining Summary.

GOLD AND SILVER.

California.

Placer County.—The Auburn *Herald* of November 23d has the following: The Wall ledge, which is located three miles north of town, still continues rich. The shaft is now down about fifty-three feet, and the rock continues to prove rich. On Sunday last we saw a piece of rock taken out at the depth of fifty feet, which was studded with free gold. The company have out about twenty tons of rock, which they believe will pay one hundred dollers to the ton.....The Dutch Flat *Enquirer's* Iron Hill correspondent says: The miners are all busily engaged. The Morning Star company are running their mill day and night, and are also running a new tunnel lower than the old one. They expect to strike through during the winter, in which event they will put up a new mill in the spring. The Lebanon company, on Prospect Hill, started their mill on Saturday last, and will run it day and night as long as the water holds out, and as soon as it fails they intend to procure an engine and run with steam. The old North Star has commenced operation by running a sluice-tunnel. Belthe & Brother have opened a new hydraulic claim on Prospect Hill, which promises remunerative returns. Horman & Co., on Wisconsin Hill, are washing with two pipes day and night. William Miller, of the Jamison claim, at this piece, is at work, and will make the old diggings "talk" shortly.....The Auburn *Stars and Stripes*, Nov. 28th, says that the recent grateful rains have filled the water ditches, and made the hearts of the waiting miners glad.....At Gold Run, the Yuba and Bradley ditches are furnishing fine supplies.....H. Robarts, who, it was reported, had struck a fissure that yielded 813 oz. in thirty six hours, writes to the *Stars and Stripes*, stating that he only got 428 oz. He thinks his luck was good enough, without stretching it.

Alpine County.—From the *Miner* of the 30th ultimo we learn that the superintendent of the Monitor Consolidated company has contracted with Geo. McIntyre to run fifty feet of the company's tunnel from its present terminus.....The Morning Star mine is again turning out black ore as of old. The shaft is in good ore, and contrary to former belief, water does not yet interfere with the work of sinking.....The same paper, Nov. 23d, has the subjoined: From the nature of the material to be penetrated, it is thought that the shaft on the Morning Star lode may be sunk from three to five feet per week.....Wm. Suebbert, M. E., a graduate of the Freiberg School of Mines, has been made superintendent of the Merrimac mine.....The work of hauling ore to the Silver creek mill has been resumed.....The Pittsburg company are pushing their main tunnel ahead as fast as possible, and, at the same time, sinking upon one or more of their lodes to determine their value.....The Tarnish mine of the Schenectady company is now turning out ore finely. The mine is not being worked for the ore, but to prospect and open it up; yet in the north drift, in the main tunnel, in the up shaft and in the down shaft, the workmen are taking out rock, which is taken to the assorting floor, and fine pocket ore is continually encountered.

Inyo County.—Dr. James Delevan, in Cerro Gordo, writes as follows in the Nevada *Enterprise* of Nov. 30th: I have been examining the mines since my arrival, and find them more extensive and richer than I had anticipated. They consist of silver and lead mines, and the ores generally are of a character that require smelting, and the lead is just what is needed in smelting out the bullion. There is also a large amount of milling ore in some of the ledges. This is one of the richest mineral countries that I have ever seen, and is destined to give employment to a large population. There are a number of smelting furnaces here, put up and run by Mexicans, who are producing considerable bullion. I am in charge of the Cerro Gordo company's affairs here. They have many good mines. I am about to erect a furnace for smelting ores, and a basso for refining the bullion. This company have ore that will produce an immense amount of bullion. I cannot say what the ore will produce per ton in these mines, but the estimate of others who have been longer here is from $150 to $600 per ton.

Kern County.—The Havilah *Courier* of Nov. 23d has the following items of news: The New York and Clear Creek company are now crushing richer rock than ever before. The old firm of Marsh & Kennedy, whose business has been suspended for some weeks, will resume work on Monday.....The property of the Mammoth company was sold on the 18th instant, at Sheriff's sale, to George D. Roberts. Work on the mine will be resumed.....We have seen some rock of unusual richness taken from three different claims in Sageland district: the St. John, Rockweiler & Co.'s and Hurd's. Some of the rock yields as high as $500 to the ton. There is an abundance of rich rock in this district, and the prospects generally are encouraging.....The Delphi mine in the upper end of this town, is turning out better rock than ever before found.....The New York and Clear Creek company have recently struck a large new vein of surpassing richness.....Rand's mine is also doing better, and will commence crushing again.

Siskiyou County.—The *Union* of Nov. 23d has the following: A company is engaged in running a tunnel into one of the banks of Rancheria creek, near Cottonwood. The bed of the gulch above the point where the tunnel is being run has been very rich, and it is the opinion of the gentlemen interested in the tunnel that the load has left the present bed of the gulch, and is to be found back in the bank or hill. At the edge of the bank there is high bedrock, but it is thought there is a channel further back, which was the original bed of the stream. The tunnel is being run with the expectation of finding this channel, which, if found, it is supposed, will be rich in gold, as the bed of the stream above that point has been.

Calaveras County.—A Railroad Flat correspondent of the Mokelumne Hill *Chronicle*, writing Nov. 25th, says that Hepburn & Co.'s mill is constantly at work grinding rock from the different mines in the vicinity, and, since the Hesse pan has been in operation, with entire satisfaction to the owners. They cleared up a lot of 42½ tons from the Petticoat mine last Saturday. The result exceeded the expectation of both the owners and millmen. Calculating the bullion at $16 per ounce, the yield was within a fraction of $59 per ton.....In addition to the foregoing, the same paper says that quartz mining at West Point and Railroad Flat is daily becoming more successful. Barnes & Casner's last run of 105 tons averaged $57 32 per ton. Austrian John ground 13½ tons, that paid $61 per ton.....A correspondent of the San Andreas *Register*, writing from West Point, Nov. 18th, says: The mining prospects of our district continue good. The Casner Brothers have just got into the Zacetara mine with their lower tunnel, which taps the mine sixty feet below the old works, and one hundred and forty feet below the surface. At this depth the lode is found to be from two to three feet wide, and the ore is much richer than any hitherto taken from the mine—prospecting for a yield of $150 to the ton in free gold. At the Gouldsen mine, owned by Peters & Co., they are taking out a large quantity of rich ore. The owners of this mine have, during the past summer, sunk a shaft fifty feet below the former level, and on each side of the shaft they find large bodies of rich ore several feet in length. Lascy expects to have his chlorination works in operation by the middle of next month. In the meantime he is vigorously prosecuting work on his mine at Valentine Hill, and is raising a large amount of ore. Widderbolt & Co., on Soap Root gulch, are sinking on their mine, which will in a short time probably pass into the hands of a San Francisco company. Sixteen hundred pounds of ore from the celebrated Heckendorn mine, at Blue Mountain, crushed by White & Brother at the Harris mill last week, yielded at the rate of $20 per ton in free gold, working through a common battery, and $26 per ton from the tailings, worked through White's Etna Calcining Furnace, making a total yield of $46 per ton. Thus it will be observed that more gold can be obtained from the tailings by the calcining process than the ore will at first yield in the battery.

Plumas County.—The following items are from the Quincy *Union*, Nov. 30th: About 20 claims have been located in the new mining district in Mohawk valley. Eleven cabins have been built and the miners are preparing for the coming water season. Messrs. Jackson & Co., have just completed a ditch to carry water upon their claims, which will enable them to work in the summer as well as winter. A short time since, Babb & Co., in one day took out $65. They found one piece which weighed $20. According to the laws of the district, each claim owner is allowed three hundred feet. Claims have been located nearly to the summit of the mountain.....We learn that Bell & Co., on Mill creek, near American valley, have struck coarse gold in their claims. A few days since they found several slugs, one of which weighed about $60.....Good quartz rock has been struck on the Pennsylvania ledge, in Indian valley, and it is being hauled to the mill to be crushed.

Sierra County.—The Downieville *Messenger*, of Nov. 30, says that the owners of the Chips quartz ledge are busily at work putting up an eight stamp mill, which they intend to have in running order in a few weeks. Their rock pays remarkably well.....The result of the recent turn of the Phœnix mill, above Sierra City, was $600 per ton from the upper or smaller ledge, and $25 per ton from the lower. The company has placed everything in order for the winter, and will do no more work until spring.

Amador County.—The Amador (Jackson) *Ledger* of November 30th, says that last Sunday the Oneida company made their semi-monthly clean up, and the return was worth $11,800.....At the Coney & Bigelow mine, just now, all is hurry. All of the machinery for the new hoisting works is on the ground, the building up, and the mechanics are putting everything in its proper place. The shaft has been newly timbered from top to bottom, so that when they "start up" again everything will go along systematically. At the mill, a new boiler, with 47 flues, is being set, and eight additional stamps added.

Nevada County.—The Nevada *Gazette*, of Dec. 3, says that the New York Hill company took out of their mine, during the month of November, 540 loads of quartz. This has been crushed at the Massachusetts Hill mill, but not yet cleaned up. The yield of the mine for the month of October was 500 loads of quartz, producing $20,000. The rock crushed in November it is believed will yield at about the same rate as that worked in October.....The same paper of Nov. 30 says: We were shown yesterday, by S. N. Stranahan, superintendent of the Chalk Bluff Blue Gravel company, some fine gold specimens taken from the company's claims near the cascades. One nugget, picked up on the bed rock, near the rim of the basin, weighs about two ounces and a quarter. Several other lumps, which were also picked up on the bed rock, or washed out in pans, weighing from a quarter to a half an ounce. Mr. Stranahan informs us that they will commence breasting out the gravel next week, but it will be two or three weeks before they fairly get under way. The prospects of the company, as well as others in the vicinity, are very favorable.....The Grass Valley *National* says that the idea of prospecting for gravel diggings by boring instead of sinking shafts, is finding favor in several sections of the country.....The *Transcript*, Nov. 27, says that a quartz ledge, which shows fine croppings, was discovered a few days since near the Starr mine in Eureka township, by Michels & Co. The parties are now engaged in opening the ledge for the purpose of testing its value.....A contract has been given to parties to take out a large quantity of rock from the upper level of the Union mine, owned by the New York company.

Tuolumne County.—The Stockton *Gazette*, Nov. 30, says that a gravel cement mill at Jeffersonville, crushes 35 tons of ordinary gravel in 12 hours, and 80 tons in 24 hours, if the gravel is not very hard.

Mendocino County.—From the Mendocino *Democrat* we learn that a silver ledge has been discovered on Eel river in that county, and that a company has been organized to work it. Some croppings, sent to San Francisco for assay, made a return of $46 59 to the ton.

Shasta County.—The Shasta *Courier*, of Nov. 23d, says that W. H. Gooch, of Dog creek, reports the discovery of a very rich gold quartz ledge on Soda creek.

Montana.

The Deer Lodge City *Independent*, Dec. 7, learns that some very rich placer diggings have been discovered, and are now being worked by rockers, across the range. They are in the vicinity of Alta gulch, on the head waters of the Boulder. The news created considerable excitement around Butte City; in fact, it drew to the full extent of the floating population of that section. Stampedes, without doubt, will be quite numerous this winter, and great will be the suffering occasioned thereby.....A Philipsburg correspondent writes under date Nov. 25: Rumley & Bugher's boiler, engine and other machinery, have passed up the creek to their mill site, near their ledge. They feel confident of success, and will probably be in operation in one month, or at New Year's. Owners on the Confederate lode are negotiating for a twelve stamp mill, with a fair prospect of success. Should negotiations terminate favorably, they intend to make all necessary preparations for an early start in the spring, and it is not improbable that the mill will be delivered on the ground before

the first of January. We believe that contracts to sink have been let upon every claim belonging to the Comanche. Two or three others of note besides that, on the Poorman, have been entered into since my last letter. Parties from Helena and other camps are now here seeking such contract, with a fair prospect of success. This is as it should be; hereby the interest becomes mutual and general among our own citizens throughout the Territory. I find prospecters who are unable to develop their property more liberal than could have been expected, or than they probably will be required to be again, in the future of this camp. Wages are low, and those desiring to secure valuable property, at a moderate figure, would do well to come and see for themselves.....The Helena *Post*, of the 14th ultimo, has another article from the pen of Mr. Wm. T. Lovell, on mining matters in Madison county. He thus continues: This part of the district has been heretofore known as Norwegian district, but is generally called at present Hot Spring. It is a misnomer, for the topography and geological features are distinct, in many respects, as well as the character of the ores, and their constituent elements. We have seen that in Hot Spring proper the country is mostly broken, and the outcrop of granite marked and distinct as the country rock, with but few traces of "wash," while in the other we find the country rock so deeply buried by wash that it is only as we approach the base of the mountains of the western side that we can determine their character or stratification. The name of the district was first given in the summer of 1864, from the fact that some Norwegians had discovered placer diggings both upon the bar and creek bed of a stream named by them "Norwegian Gulch." This beautiful stream rises in the range of mountains bordering the district on the west, and flowing in a northeasterly direction, for some six or eight miles, and empties into Willow creek, a tributary of the Jefferson river. After leaving the Canon we find on each side wide bottoms, with low foothills, and it may be said almost to flow over the plateau of the Jefferson and Madison. Over this extensive deposits of gravel are found, in the creek claims proper, for a depth of eighteen to twenty-three feet, while on the bars we observed the bed-rock often nearer the surface, and seldom over eight feet in depth. These placers have been worked from the time of their discovery continually until now, and vigorously so in the spring, when there is an abundant supply of water. The claims having been laid over until next spring by the miners, there was no work being prosecuted at the time of our visit. We learned, however, that the summer had been occupied profitably by the miners by sluicing and bed-rock fluming in the usual manner. With the ditch from Willow creek, affording a great supply of water, taken higher up, we are satisfied that these placers will pay for several years to come. They are easily worked, if water in sufficient quantity can be had, the gold is of unusual fineness, and is generally coarse, and what might be termed wire gold, showing that it has not been subject to any very distant wash. Indeed, on the bar we observed a lead called French lead, of remarkable white quartz of fine texture, and abounding in free-gold, visible to the naked eye, yet, like many other good things in the world, it is comparatively useless. Leaving the gulch going south, you ascend the plateau, and in a short time you reach the summit of the divide or water-shed of the Jefferson and Madison rivers. On your left rises a long ridge. From this you observe an immense flat or plain stretching away easterly. This ridge may be said to be the eastern boundary of the gold belt of Hot Spring district, as no mines of value have as yet been discovered beyond this divide. Continuing south, you soon reach the village of Sterling, nestled amidst the gentle rolling hills of the lower part of the district, and contiguous to the several mills we have attempted to describe. The observations made by us during our visit may be summed up as follows: 1st. That Hot Spring district is better prepared at this day with mills, machinery and appliances for the saving and extracting of the precious metals from the ores than any other of the Territory, and that, as a mill for such purpose, the Midas is par excellence; that in the erection and completion of this mill, capital and labor have the assurance that it is adapted to the object sought, and that by proper outlay and judicious expenditure at first, permanency, cheapness and success are the results. 2d. That, owing to denudation, chiefly, the lodes that have been discovered and tested have been surface work, richer for the first forty or sixty feet than below this level; that most of the veins have not been (or, at least, have not proven,) so good, or paying so well below this point as above it, though presenting all the evidence, by actual work, of "true fissure veins," as the miner could desire; that, without a test, by deep tunneling or shafting, of the character and quantity of pay ore in the vein, no data exists to ascertain either the permanency or value of even the most promising mine of the district now claimed to be opened; that to do this in either mode will require both time and a large expenditure of money, necessitating a combination of capital and labor. Labor owns the mine—capital must be had to develop. The known timidity of capital place the hardy (and too often sanguine) prospector in the dilemma of not knowing how to act for his best interst. His surface ore pays; this is soon exhausted, and its market value enables him to develop for a depth even of seventy-five or eighty feet; below this his expense of extracting ore has greatly increased, and the mill shows a heavy depreciation in value; the returns do not warrant the outlay; sick, sore, disappointed, he turns from his work and consoles himself with the deceptive hope that others will develop, and by comparison of ores and results when the vein shall be opened, he will know something of his own. This is wrong, and a moment's reflection will prove it. If you will not or cannot act, let those who can do so. Combine with capital by giving an interest, or sell at such price that capital will invest. It may be that you are doing that which in after years you will regret; if so, remember your inability to act, and the old adage, "a bird in the hand is worth two in the bush." 3d. The amount of capital represented—we cannot say already invested—in that part of the district known as the Gold Field, should be concentrated in one grand tunnel project, and by proper location and vigorous work, be made to cut and drain the numberless lodes that appear everywhere and in every direction on the surface. A plan of this kind properly and honestly entered into would develop more of the territory of this part of the district in one year, and we think with better results than all the ditching and shafting by inclines or verticals would in five. The mines, if any there be, would then be known. The mills would be able to know if the supply was sufficient for one week or for years. The value of each ton would be ascertained, and the cost of extracting fixed. In short, we would then be able to open our ledger, with the mine on the debit and credit column, and by returns, certain and constant (if not great,) would at once afford a basis of estimate of the true value of the mine, which is now only speculative.....A correspondent writes to the same paper from Argenta, under date of Dec. 8th, as follows, relative to the Esler smelting works, their extent, capacity and prospects: On Thursday, the 6th inst., precisely seven weeks from the day on which the first blow was struck, the Esler smelting works were pronounced complete, and at 9 P.M. the first charge was put in the furnace. The main building is 35x40 feet, wheel-house 15x17, ore-house 15x40, and coal-house 20x40. There is also a blacksmith shop, and a comfortable dwelling for the smelters. The furnace stack is 33 feet high, 9½x7½; the motive power—an overshot wheel 15 feet in diameter—is supplied by a ditch, which is flumed and covered with manure, so that there is no possibility of its being affected by the frost. Only about one-fourth of the supply of water is used, so smoothly does the machinery work. Mr. F. Hollhaus, the head smelter who superintended the erection, and has now charge of the works, is more than satisfied with them, and willing to risk his reputation on their complete success. Nothing can be more perfect than the working of the furnace. During the first twenty-four hours one ton of rich lead was run out. There is now out 6,000 pounds—say 2,600 pounds per day—worth from $500 to $550 per ton. When from fifteen to twenty tons have been run, the furnace will be stopped and the cupel started, it not being deemed advisable to crowd the works at first. When working to its full capacity two tons of lead per day will be run, and from twenty to twenty-five tons cupelled at one operation.....The same paper, Dec. 14th, has the following items of news: A letter from Mr. Countryman states that the St. Louis and Montana company's mill at Flint creek is running constantly, and turning out bullion at a rate perfectly agreeable to those interested. The mines are improving as developments bring their riches to view—"the Hope, Comanch and Poorman leads far exceeding expectations." Messrs. Taylor, Madison & Co. have purchased 1,100 feet on the Van Dieman lode, northeast of the Comanch, and are developing it. The vein of pay ore is thirteen feet wide. One of the company is about to start East, and will have a mill gotten up in St. Louis this winter, from California patterns of the latest and approved character. Everything is lively in Phillipsburg.....Rich diggings are reported to have been struck on the Big Boulder, some five or six miles above the crossing of Virginia City road, and quite a furore exists in the valley about them. Mr. Peter Slater, formerly of Alder gulch, and the discoverer of Slater's bar there, is said to be one of the principal owners. Our infomant could give no particulars with regard to the extent of the new placers.....We learn that the ten-stamp mill of the Lost Lake company, located in the above gulch, recently cleaned up $1,100 from seventy tons of ore from the Little Giant lode. The tailings of the mill have been saved, and it is thought they will yield largely. The works are under the superintendence of Mr. Lamb, a gentleman well known in the vicinity, and one of the most energetic and practical miners in the country.....A letter in the Deer Lodge *Independent*, dated at Missoula Mills, Dec. 5th, says: Some little excitement has been caused in Bitter Root valley in regard to quartz; and Mr. Tyler, an old quartz prospector, and several others, are now at work on those already found, while others are prospecting for new lodes. If I am not very much mistaken, we shall have in the next year a splendid quartz camp in the Bitter Root valley, which many seem to think will rival Flint creek, of your county. I am no judge of "rock," but have been told that the rock or a portion of it is good.

Nevada.

The Comstock.—The San Francisco *Commercial Herald* of December 10 thus reviews the mining share market for the ten days ending December 10, 1867: The mining share market has been characterized by a considerable degree of activity during the period under review, and the transactions embraced a more extended list. Some stocks met with a material decline, while others have been well maintained at a slight advance. At the close a much better feeling prevails, with an upward tendency of prices. SAVAGE continues in the market to a large extent, receding from $107, seller 10, to 103, improving at the close to $110 75. The amount and appropriate value of the ore extracted during the past seven weeks compare as follows:

	Tons.	*Value per Ton.*
November 30th	1,800	$39 65
November 23d	1,813	37 62
November 16th	1,626	36 20
November 9th	1,706	35 52
November 2d	1,821	38 80
October 26th	1,921	38 55
October 19th	1,944	39 90

During the week ending November 30th, the north mine, on the seventh station, yielded 379 tons of ore, and the north mine on the third station, 788 tons; in the previous week 888 tons were taken from the last named locality of this mine. The improvement in the average yield for the present week is due to the better class of ore obtained from the Potosi chimney and the 50-foot station of the south mine. The cross-cut from bottom of south winze, on third station, passed through nineteen feet of ore, and is said to continue in ore, though the quality is not so very good. It is thought by some that they are on a new body of ore in the south drifts on the third and fourth stations, the deposit commencing about twenty-five feet above the level of the fourth station. This gives much more hope of a continuation of ore in depth than if this was the old ore body. Work is still suspended at the old shaft. The usual monthly dividend of $7 50 per share is payable since the 9th inst.....CROWN POINT—was moderately dealt in, gradually declining from $690 to $610, and closing on the 7th at $630. During the week ending November 30th, the north drift on the 700-foot level, 173 feet from the switch, has been carried south some six feet, and the breast, now seven feet wide, is said to open out well. The south drift, 166 feet from the switch, runs in porphyry and quartz. The north drift on the 600-foot level has been turned to the east, and sixty-one feet below the same level and nineteen feet south of winze, they found five feet of good ore. The shaft is thirty feet in depth below the 700-foot level, with a quick flow of water to trouble the laborers. The average daily product of the mine is about sixty tons of $30 ore. They received $36,000 in bullion during the month of November, with another clean-up from the Rhode Island mill to hear from, which will make the receipts for the month about $50,000.....IMPERIAL—has been quite active, advancing from $170 to $180, receding to $150, and closing at $167 50. The shipments of bullion in November amounted to $63,368; in October to $68,887 94. Necessary repairs to the mills occasioned a lessened product than was expected; however, a yield of $90,000 is predicted for the present month. Ore from the 370-foot level is said to yield well—largely above the average quality, if worked separately—but the amount extracted is not stated. The spur-wheel on reel shaft, which was broken on the 5th instant, cutting one hundred feet of wire rope, will have to be repaired at the expense of the contractors, and will not be any loss to the company save in the stoppage during the period required to replace it.....KENTUCK—has been well maintained during the period under review, selling at $160 to $165, then at $168, and closing at $175. The bullion returns for November account foot up $60,231. A dividend of $15 per share is payable on the 14th inst.....CHOLLAR POTOSI—opened at $131 to $132 50, declined to $121, then sold at $124 50, and closed at $129. The old mine yielded 1,800 tons of ore during the week ending November 29th, against 1,700 tons extracted the previous week, the Piute switch station continuing to produce by far the largest amount. In going south, sixty feet above the track floor of the third Sante Fe level, a good body of ore has been developed, which is said to promise well. In the southwest drift, from the fifth station new shaft, quartz is reported to be more abundant.....GOLD HILL QUARTZ—shows a decline, sales of a few shares being reported at $100 per share; at the close $120 per share is asked. The bullion product of November amounted to $12,250; in October, $10,994. On the 1st of the present month this company had a cash balance of $4,500 in the treasury, besides supplies on hand and paid for valued at about $5,500. It is confidently believed that the trustees will declare a dividend at their meeting on Monday, the 9th instant. .....AMADOR—commands $210 per share. The bullion product for November reaches $37,300: in October the yield amounted to $38,555. The Superintendent reports that the north stopes now show a ledge twenty-five feet wide—nine feet constituting the main and sixteen feet the boulder ledge—and the south stopes an average of twelve feet. The November product of bullion has been principally obtained from the boulder ledge. .....GOULD & CURRY—sold within a range of $327 50 to $310, closing at $310. The annual meeting of the stockholders of this company will be held on Monday, the 16th inst.....OPHIR is dull of sale, a few feet changing hands at $60 to $50. The annual meeting of the stockholders will be held on Wednesday, the 18th inst.....EMPIRE is also in light request; sales were made at $167 50. Annual meeting of the 18th inst.....HALE & NORCROSS has been in moderate request, declining from $840 to $810, then selling at $815, and closing at $830. The total liabilities of this company on the 1st inst. amounted to $98,000, and not $130,000, as stated by a "bear" correspondent of a leading newspaper of this city. The ore at present extracted averages about $31 per ton.....YELLOW JACKET—declined from $524 to $465, and closed at $490. The *Trespass* says that the station timbers at the 730-foot level have been placed, and two drifts started—one east, the other south, now in from eight to seventeen feet, in clay and porphyry. The winze near the Kentuck line continues in ore, but all hoisted of late will not more than pay for working.....OVERMAN advanced from $44 to $50, and closed at $57 50. Nothing of importance from the mine..... BELCHER realized $100 to $115, SIERRA NEVADA, $3 to $3 50, BULLION, $15.

Silver Bend District.—The news from this district by the last mail is very flattering. The Austin *Reveille* of the 16th ult. says: The recent developments in the El Dorado are so extraordinary as to lead to the belief that it will prove the mother vein of the Silver Bend District. We stated on Saturday that 6,600 of ore from a claim on the El Dorado had arrived in this city for reduction, the yield of which would be very high. Since that lot was shipped from the district the ore has increased wonderfully in richness according to the Belmont *Reporter*, which says: Compared to that which is at present taken from the mine, the lot sent to Austin will rank only as medium or second class. The incline has now been driven twelve feet below the point at which the good ore was first struck. It is following the foot wall and is about five feet in height. Four feet of the vein immediately adjoining the foot wall is a mass of mineral, probably the richest body of argentiferous ore ever disclosed in any mine in the State, while the remainder above will probably mill upwards of one hundred dollars a ton. The thickness of the ledge at this point is conjectured to be from twenty-five to thirty feet, but as it has never been cut through, its width is not known with certainty. The total length of the incline is one hundred and twelve feet, giving a vertical depth from the surface to this body of ore of about seventy feet. We will not pretend to say what this ore will yield, but hazard an opinion that it "is richer than anybody else's ore" in the district, taken as a body. In fact it is the most extraordinary strike ever made here, and enhances the value of all mining and other property in this section of country. It will detract nothing from the merits of the other magnificent veins, if we assert our belief, and the developments of the past week warrant it, that the El Dorado is the great mother vein of the district, and to its superiority in many particulars must all others yield the palm.....The *Reporter* Dec. 21, has the following additional: The ore in the incline of the El Dorado South still continues of about the same quality as a week ago—assays ranging from $400 to about $5,000 per ton. A depth of sixteen feet has now been sunk in this body of rich ore. The incline will be continued until water is reached, when levels will be run and preparations made for mining upon an extensive plan and in a thoroughly systematic manner. In the absence of a custom mill at this place the ore taken from the vein in the progress of sinking, will be sent to Austin for reduction, as it will pay a handsome profit above the cost of transportation, etc. It is estimated that the ore already out will net a sum sufficient to reimburse the owners for all expenditures made upon the mine to the present time. The El Dorado South is quite likely to furnish one of those rare and felicitous anomalies—a silver mine paying the entire cost of development, and for the erection of hoisting and reduction works, without the aid of outside capital, and entirely from the proceeds derived from incipient working. For a long time but very few, aside from the owners, considered the claim of much value; but they never doubted nor faltered in their labors, and to their pluck and perseverance are the community indebted for results from which vast benefits to the section must accrue. We are rejoiced at their munificent reward. A shipment of five and a half tons of ore will be made to-day, aggregating upwards of thirteen tons forwarded since the strike.

Pahranagat District.—Mr. W. Fleming, superintendent of the Alameda company, arrived from Pahranagat last evening, and reports the arrival of the machinery for Ostrom's mill at Hiko on Friday last. Mr. Fleming speaks highly of the fine appearance of the company's claim on the List ledge, which is perhaps the most fully developed and promising in the district. Several companies are prosecuting work under encouraging circumstances.—*Reveille*, Dec. 18.

Egan Canon.—So quietly have the operations of the Social and Steptoe company at Egan canon been carried on, that very few people know anything concerning them. Under the good management of Mr. John O'Dougherty, the Gilligan ledge has been opened and explored to a considerable depth and extent, without any expense to the company. His motto has been, "Make haste slowly," which is the true expedition in mining. The mine has been so fully developed that the superintendent will erect next spring, and perhaps this winter, a twenty stamp mill, with the knowledge that it can have a full supply of ore. This is surely better than the dash and fuss which builds a mill at the beginning and at the end has neither mill nor mine. We rely upon the Social and Steptoe as one of the solid mining corporations of Lander county.—*Ib.* Dec. 15.

Colorado.

The Georgetown *Miner* of December 26 thus speaks of the Herring Lode Tunnel at Mill City: A few days since we visited this work and found that considerable progress had been made since our previous visit, in October last. The tunnel is now opened four hundred and ten feet, and is being driven on the Herring lode, which was struck three hundred and sixty feet from the mouth of the tunnel. This lode shows an immense crevice, full thirty feet in width, at the point where first tapped by the tunnel, composed of rather a low grade ore, consisting of quartz and carrying iron and copper sulphurets, and some little argentiferous galena. Fifty feet from where it was first struck, it has closed up to four feet between the walls. It will probably yield in bulk from twenty to forty dollars per ton. There is, on the dump, from two hundred and fifty to three hundred tons of this ore. This is an immense vein, running almost due north and south, and cutting, at right angles, a large number of fine lodes. Five of these east and west veins have already been cut by the tunnel, and another one will be opened twenty-five feet ahead of the present working. The gentlemanly and efficient Superintendent of this work, W. R. Hawkins, is driving this tunnel, not for the purpose of taking out ore for present use, but place the mines in such shape that when reduction works are erected by the company, he will have an immense amount of ground to drift on. By estimates made by this gentleman, it is shown that the ore from the different lodes opened by this tunnel can be mined and delivered on the dump at its mouth for the nominal sum of one dollar per ton. The delivery of the ore at the point where

the company propose erecting reduction works, on Clear Creek, ought not to exceed the cost above mentioned. Thus it will be seen that even low grade ores will pay a handsome profit, provided the works erected are of sufficient capacity to economize labor. We predict for this company, the Boston and Chicago, an immense revenue from their property, when they decide upon a process and erect works to reduce their ores. They have been fortunate in securing the services of Mr. Hawkins, who by the manner adopted by him for working the property, has succeeded in opening it up at far less expense than could have been done by any other mode. He has given to it his exclusive personal attention, and can show a piece of work that cannot be excelled in the Territory.....Work on the mill building for the company of which Mr. Reed is Superintendent, at Mill City, is progressing rapidly toward completion. The dam and the excavation for the flume is nearly finished. Mr. Dodge, of Mill City, is the contractor, and his work shows that he cannot be excelled. ..... There is some prospect of the Downieville Mining Company being resuscitated. We would like to see life infused into this institution, as we know from personal observation that some of the property held by the company is as good as any in the Territory, and economically worked cannot fail to prove remunerative.....Mr. Kinney, at his works this side of Downieville, has about thirty tons of ore from the Young America lode crushed, and probably commenced smelting and amalgamating before the issue of this paper.....A three-foot vein of very fine iron sulphurets has been struck in the Albro lode, Morris District. The Albro is one of the best veins we have seen in the Territory, and is now being actively developed.....The Golden City *Transcript* of December 25 says: The shaft on the William Penn lode vein is now fifteen feet in depth, well timbered, and six by ten and a half feet in the clear. The crevice is eight feet in width, with a vein of fine sulphuret ore, carrying blue and green carbonate of copper, full two feet in width. A shaft house has been erected, twelve by eighteen feet, of ample size to admit of the storage of a large quantity of ore. The property is being acrively worked, which will be continued throughout the winter.... Garrott, Martine & Co., have made some marked improvements in their works during the past two weeks, and they are now running nicely. The many vexatious delays and breakdowns they have had to contend with during the past two months, would have discouraged any person who had not the active energy and enterprise that characterize the managers of these works.....C. J. Goss, Esq., has struck a vein of very rich argentiferous galena, in the Lily lode, that assays over $3,600 in silver to ton of ore. All of the lodes on Brown Mountain appear to increase in richness to a remarkable extent as they are developed.

Idaho.

We learn from the *Democrat* that an excitement was created in Boise City by the discovery of two gold and silver bearing quartz ledges. They are situated in the vicinity of Willow Creek, about three miles from the road, and are named the "Golden Age" and "Surprise." The former is reported forty feet wide, and fine gold could be seen in several pieces that were brought into town. There are some parties at work mining in the creek between the ledges; they say it pays eight dollars per day..... The Silver City *Avalanche* of the 14th ult. has news of more quartz discoveries. We have been shown some ore taken from a ledge recently discovered up the gulch not far from the Whiskey mine. The ledge is said to be from ten to fifteen inches wide near the surface, and if the mass of the ore is half as rich in gold and silver as that shown us the lucky discoverers will be sure of a fortune. We understand that it is called the "New Whiskey."..... We also learn that Col. Fogus has struck what purports to be another rich ledge somewhere on the mountain above the Silver Cord. The Colonel had observed rich float quartz in that vicinity for some time, and going up the mountain side as high as any float could be seen, he sunk down and struck rich gold bearing quartz, which he is of the opinion is the source whence the previously discovered pieces came. Some people seem to have an idea that it is no use to prospect in this county, after the discovery of so many rich ledges; but the fact of the matter is, as developments of every week demonstrate, that Owyhee is not half prospected, and there yet remains as good a chance as ever there was to strike something good if people will only be industrious and look for it.

New Mexico.

The Santa Fe *Gazette* of the 14th ult., has the following flattering intelligence relative to the new Moreno mines: On the east side of "Old Baldy," a well defined quartz vein has been recently opened a short distance. Four pounds of the ore crushed yielded seventy-eight cents of gold—or at the rate of $390 to the ton. This quartz like all the quartz found in New Mexico, contains only free gold and no pyrities or sulphurets. In a specimen sent to Colorado thread gold could be seen through the whole mass of quartz. This is found near the surface. That this vein will be found much richer as it is descended upon, none who know anything of quartz mining will deny. Among the nearly five hundred miners who will winter in the Moreno mines this discovery has naturally created great excitement. We believe that we are just beginning the work of discovery in our Territory. The experts in mining—who with the enterprise of which miners are everywhere celebrated—will doubtless overrun our whole mountain system, and that the most extensive and richest deposits of all the precious metals will be found almost everywhere we have no doubt.....The Denver, Colorado, *Gazette*, has the following from Judge Holly, relative to the Moreno mines: These mines are situated just over the Raton Mountains, on Maxwell's property, twenty miles south of the southern line of Colorado, and about thirty miles north of Taos, Moro county, New Mexico. Splendid lodes are found there, paying ten dollars per day to the hand. Gulch mining is in abundance. Mr. Maxwell, the owner of the property, if these mines turn out as are expected, will be the richest man in the United States. He owns forty miles in a straight line, including these mines. There are now about five hundred Americans there, who are fast building up an important point. These Americans have deputed Judge Holly to apply, through the Legislature of Colorado, by means of a memorial to Congress, asking for annexation to this Territory, and to be cut off from New Mexico. It appears that the people of New Mexico are anxious to sever their connection as urgently as are the Americans who reside in the section. The Mexican gentlemen who now represent the southern part of Colorado, are opposed to the severance of the two lower counties, and disavow on the part of their constituents any intention to ask for such action.

Canada.

The new silver mines of Thunder Bay on the north shore of Lake Superior, are attracting some attention. The following brief general sketch of the movements in this quarter taken from the Toronto *Monetary Times* of Dec. 12, cannot fail to prove interesting: The discovery of the existence of silver on Thunder Bay, north shore of Lake Superior, occurred during the fall of 1866, and is credited to Mr. John McKellar, a Scotchman, and miner and explorer from Ontonagon, Mich. A rumor of the discovery having reached this city, a party of American gentlemen started in the spring of the previous year to the field of discovery and after a brief examination found their wishes and expectations more than realized. A survey of mineral land was at once commenced, and on the arrival of the first boat from Collingwood a large tract had been secured, and in two weeks afterwards a *posse* of practical miners was brought on, who immediately commenced work. Reports of the richness of the country had, in the meantime, reached the ears of various parties in this country and the States, and much eagerness was exhibited to obtain locations. Further explorations and surveys were made, and extensive tracts of land taken up, and the patents secured. The only mining operations carried on last season were those of an American company, called, we believe, the "Shuniiah," composed of Messrs. J. E. Withers, N. C. Morse, B. Young. Jno. Gray, R. B. Wilson, and Isaac J. Morse. They have commenced two shafts about 200 feet apart, on one of the lodes in the territory, and have already attained the depth of 30 or 40 feet. From these a considerable amount of ore has been taken, consisting of native silver, black sulphuret of silver, argentiferous galena, and leaf silver, through the spar. This lode is said to be fully 20 feet in width, having an east and west bearing, with dip to the north, as we descend the lode. The sheet of mineral and metal is said to be about four inches in thickness, interspersed through the spar and quartz, and mingled with horne blende. The yield of the working ores from practical assay is stated to be at the rate of $700 per ton. Specimens have been found on this lode, and also in another portion of the territory that have given a much larger yield. We were shown a button of pure silver said to have been taken from 2½ pounds of rock, which was worth $1.50. More recently, the Thunder Bay Mining company has been formed, composed of gentlemen chiefly resident in Montreal, with a large capital; they commence mining operations the present winter. Their territory is of the highest promise, and judging from specimens should prove a fortune to the owners. It is expected that other companies will commence operations on the opening of navigation, with ample means to prosecute mining and develop their lands. In most instances the actual owners have the matter in hand, the public not having yet been invited to aid or participate either by stock subscriptions or otherwise. Upon the whole, there seems good reason for believing this one of the richest silver regions in the world, either on the old or new continent. Should this view be further substantiated by future developments, it must prove a great source of wealth, not merely to the immediate owners, but to the inhabitants of the entire Dominion.....The means of travel for the past season were by the steamer Algoma, which made semi-monthly trips from Collingwood, but next season it is expected that regular weekly communication will be established by private enterprise, if not by government aid....A correspondent of the same paper writes under date Dec. 23, from the Madoc gold region, as follows respecting the reduction works which have gone into operation. "The first to attack the "quartz" (miner's quartz includes all the gold bearing rocks, whether silicious, calcareous, or composite) is that of Messrs. Daniels, Scott & Taylor. The crushing part of this mill consists at present of only two stamps, of small dimensions, not exceeding 100 lbs. each. At the top of each stamp-shaft there is an air tight box, fitted with a piston, to which the stamp-shaft serves as a piston rod. When the stamp is raised by the action of the cam, the air within the box is compressed in the upper part, and when the catch is released drives the stamp down upon the material to be crushed with a force of 6,000 lbs., or three tons, with a speed of sixty blows a minute, which can be increased to over seventy in case of need. The catches are so contrived as to give the stamps a rotary motion on the longitudinal axis, so as to impart a grinding as well as a crushing action. These stamps work in a strong cast iron mortar, into which the rock is fed, and through which a constant stream of water is kept flowing. As fast as the rock is crushed fine enough, it is carried by the water through a screen of wire cloth, about forty mesbes to the linear inch, and passes into a vat where it is deposited, while the water is continually pumped back again to supply the mortar. When the vat is filled, the crushed ore is taken up and placed in the amalgamators which are two large wooden cylinders, placed in a horizontal position, and suspended by iron journals at the ends, one of each pair being hollow, and connecting by an iron pipe with the exhaust of the engine which drives them. The cylinders are open at the top for about one-fifth of their circumference, and along the middle of each extends a fixed screen, having an iron pipe pierced with numerous small holes running along the lower edge and up one end. This pipe communicates with the hollow journal, and admits a column of steam which issues from the small apertures, and at once heats and agitates the contents of the cylinders. Into these vessels the crushed ore is introduced in sufficient quantities for a "charge" along with the necessary proportion of water, the chemicals, which play an important part in the process, and are varied as the ore contains gold or silver, and the proper quantity of quicksilver. The cylinders are then connected with the engine shaft, and by an eccentric motion are made to oscillate slowly in an arc of about 60 deg. This motion is continued for some four hours, when the charge is withdrawn, the mercury and amalgam collected from the "tailings," by the aid of Dr. Wurtz's sodium-amalgam, and retorted off, leaving the precious metal behind. The proprietors have recently added to the original apparatus an electric agitator, the invention of Mr. Dunstan, their chief operator, for the purpose of preventing the escape of any small particles of mercury or amalgam, which operates to a charm. For this, as well as for the rest of their apparatus, they have secured patent rights. I shall make Messrs. Turley & Gilbert's establishment the theme of a future communication, as it differs materially from that of Messrs. Daniels & Co. The Richardson mine is still yielding large quantities of ore: I saw to-day, in possession of Mr. Glass, a piece of rock weighing about four ounces, fully half of which was pure gold: also a large piece in several parts of which gold was richly inlaid. I had a conversation on Saturday with Mr. Anstee, the contractor for the building of the Richardson reduction house. He informed me that they expected to have everything ready to commence work with ten stamps, by the first of January. Notwithstanding the cold weather, new discoveries continue to be made, which extend the limits of the gold region in all directions much further than was anticipated. The latest of these is the finding of gold at Brockville, in a very promising development. An apparently very rich deposit has been struck on lot 19 in the 4th concession of Madoc, cornering with the lot on the east half of which the Richardson mine is situated. A piece of the rock, about 6 pounds in weight, gave to an assay by amalgamation, nine grains of gold, or at the rate of $150 per ton of 2,000 lbs."

COPPER.

Michigan.

The copper shipments from the port of Eagle Harbor, for the season of 1867, were as follows.

Company.	Tons.	Lbs.
Copper Falls	1,086	1,077
Central	783	1,714
Amygdaloid.	107	1,620
Madison	15	0000
Total	1,991	4,411

The Houghton *Gazette* of the 19th ult. states that sixty men have been discharged from the Pewabic mine, and that all work has been stopped, except drifting. A few men have also been temporarily discharged from the South Pewabic, the accumulation of rock around the shafts being so great they could not be employed to advantage. As soon as possible the mill will be set to work again.....The settlement of the affairs of the Huron company progress slowly. Judging from appearances, work in the mill will not be commenced before the first of February..... The Ontonagon *Miner* of the 14th ult. has the following cheering intelligence relative to the discovery, at the Ogima mine, of a copper vein that bids fair, from its appearance, to rival anything yet discovered in the copper regions of Lake Superior. It was discovered early this spring in driving in an adit level on a crossing from the south side of the Bluff, east of No. 1 shaft, but nothing was done on it to prove it up until within the past few weeks, when a series of experiments and a fair test has been made by the agent, to determine its value, with the following result, as given to us by Mr. Spalding. A party of miners were set to drifting on the course of the vein to carry the drift twelve feet wider. After going in about two feet the drift was narrowed up to about seven feet, and then continued about five feet. All of the rock taken out from the commencement was saved and weighed, making twenty-four tons. The stamps had been all cleaned and laid up for the winter, but they were put in working order, the copper ragging on the seives of the washers carefully weighed, and the twenty-four tons stamped in twenty-seven hours, the work cleaned up and weighed, showing a yield of five per cent. from the rock stamped. The rock is trap, thickly charged with heavy shot copper, easily stamped and dressed. The vein has also been cut at a point 315 feet distant from the place first mentioned, where it is showing equally as well, and it is undoubtedly the best show ever opened in Ontonagon county, if not on the lake, coming at a time of unusual depression in copper matters, which has cast a gloom over our county, causing many of our citizens to despond for its future. It will cheer the hearts of those that have courageously held out and struck by its fortunes through all its vicissitudes.....We condense as follows from the same paper: At the National mine the underground appearances are, at this time, in a favorable condition, but like other mines in this region, there has been a curtailment of force and expenses. This course was evidently thought necessary to save the stockholders from loss, but with the present number of miners—between fifty and sixty—distributed on well-selected points, we see no reason why satisfactory results may not be obtained. Several of the stoping contracts are now showing mass copper; in one place a mass has lately been thrown out by a sand-blast that will probably weigh twenty tons. The stopping of the stamping machinery for repairs will very materially affect the product during the winter months; but with a large accumulation of stamp-rock in the spring, the advantage of summer weather will compensate for the present temporary suspension.....At the Ridge some material changes are noted. The working force remains about the same—twenty-two miners—all of whom are engaged in opening up the mine, stoping operations having entirely ceased until the last of winter or early in the spring. The workings at the Ridge have been mostly confined, during the past summer, in stoping west of No. 3 shaft, on the twenty-fathom level, with most excellent results. There has been a ton of copper removed monthly to each man employed in the mine, or, as we have heard it estimated, a half ton of copper found in every fathom of ground removed. This result has paid all expenses incurred in the summer, and left margin enough, it is believed, to carry the operations of the mine through the winter. By opening of navigation the Ridge, with the work laid out for the winter, will have a large amount of stoping ground, rich in various forms of copper, and will, we doubt not, as she has during the summer, pay her own way, with copper even at its low price of to-day.....The Minnesota is looking well. Force engaged opening the mine, with the exception that a few men are engaged in stoping in old places of the mine. The plan of operation laid out is being prosecuted vigorously. In No. 2 shaft ten feet of ground was removed in November, from which a half ton of mineral was taken. No. 4 shaft is very much pinched up, if we may use such a phrase, containing considerable copper. Both shafts will probably produce a great deal of copper.....Four of the Ontonagon district mines return their products as follows for the month of November:

Name.	Barrel work.	Stamp.	Mass.	Total tons.
Minnesota	9,576	6,347	23,682	19 1596-2,000
Rockland	4,674	11,025	412	8 111-2,000
Superior	2,208		4,635	3 843-2,000
Ogima (no stoping)	1,669	3,535		2 1204-2,000

The Lake Superior (Ontonagon) *Miner*, of Dec. 28th, says: We are enabled, through the kindness of agents and clerks of mining companies to present our readers the total shipments of most of the mines in our district. We trust we shall be able to furnish balance in our next issue. We would remark here that these totals may seem small, but if those interested in our county will consider for a moment the very few men employed in the district, compared to olden times, and glance at the amount of money expended then and what is expended now, they will find that Ontonagon county has done well.

	TONS.	LBS.
Evergreen Bluff	329	831
Knowlton	189	1267
Ridge	128	1669
Rockland	84	1613
Superior	42	169
Ogima	59	678
Minnesota	287	807
Flint Steel River	14	114
National	Not yet returned.	
Caledonia	"	"

The same journal contains the following: We are indebted to Messrs. Raley, Shapley & Co., of Eagle Harbor, for the following statements of the copper shipments from that port for the season of 1867:

COMPANY.	TONS.	LBS
Copper Falls	1086	1077
Central	783	1714
Amygdaloid	107	1620
Madison	15	0000
Total	1993	4,411

MISCELLANEOUS.

Minnesota.

From our Special Correspondent.

VERMILLION LAKE, Minn., December, 1867.

EDITOR AMERICAN JOURNAL OF MINING:

Your Southern special correspondent, suddenly removed from South America, in latitude 8° to 48° in North America, finds many physical aspects in the two continents which are similar. I will proceed to briefly notice some of the more striking of them. My investigations in South America were confined to rocks of the age of those of Florida, the coast of Texas, and Mexico, viz., coralline; again, others of the Tertiary age, and still again, of those much earlier, but of their exact age I cannot speak positively until my collections of fossils shall be examined and compared.

1st. Erasion of the two continents in their elevated masses.—In each, although the rocks of the Sinu Valley and the valleys of the St. Louis river and the Vermillion Lake are of widely separated geological ages, erasion of the hills of each have been of vast extent and of great thickness. Of course, those of the most recent must be less than of the older. I roughly calculated that of the Serrania St. Jeronimo, lying east of the Sinu Valley, and could not make less than *three and a half miles* in thickness, thus

reducing a lofty range of mountains, immediately after their upheavel on the supposition that the paroxysm of elevating plain about one thousand feet above the level of the sea. In the valley of Vermillion Lake I have neither time nor opportunity to measure the amount of erosion, but judging from impressions received, from a hasty transit over a portion, and knowing what it has been in other portions of the United States of rocks of the same age, it has here been of far greater thickness—anywhere from fifteen to thirty miles in thickness. What was the agent or agencies in producing this vast amount of denudation and removal? Glacialists will say at once, *ice—Glacial Ice.* In the South, a glacier having its Nevé, at Chimborazo; and in the North, at the North Pole. I am more eclectic than the positive dogmatism of the glacialist, and prefer to call to my aid all the denuding and transporting agencies that we now find at work, not, of course, excluding glaciers in certain localities. I saw no phenomenon within the tropics that I could refer to glacial action.

2d. Another point of similarity is the great width and depth of valley excavations. The valley of the Sinu is thirty miles wide by one thousand, or more feet in depth. The St. Louis valley is fourteen miles wide by about the same depth, in its widest point: unless at the point of estimation it might be considered a portion of the valley of Lake Superior.

3d. Metamorphism of the rocks of the two.—In the Sinu, at the upper end, there are talcose, micaceous, hornblendic, and other altered schists, precisely similar to those of Vermillion, but probably of quite different age of metamorphism.

4th. Minerals of the two.—Gold, silver-lead, blende, iron and copper ores are common to both. I now proceed to allude to some points of great dissimilarity. I do not write as a "Teacher in Israel," but merely give some conclusions and impressions arrived at, while more especially studying the economic geology of the two localities. 1st. Age of the two systems of metamorphic rocks. In the Vermillion valley the rocks are readily referable to the Azoic of Messrs. Foster & Whitney. While that of the upper end of the Sinu, and reaching probably far southwards is not later than the Jurassic, and it may be as old as the Silurian. 2d. So-called glacial phenomena.—In the south there is absence of all drift, all smoothing and straightening of rocks, any appearance of having been shaved off at the edges, or summits of hills, all moraines—in a word of all and any of the usual phenomena attributed to glacial action so common in North America, north of the mouth of the Ohio river. In passing over a portion of the route examined by Messrs. Norwood and Whittlesey of Dr. Owen's party, and since his geological survey of the northwest, by Fauchet and Eames, State geologists of Minnesota, I do not propose to add anything new to the special geology of this country, but merely to give some general impressions received during my trip. Lake Superior lies in a depression of the country, about 700 feet beneath the rim of its valley. Our route from the head of Lake Superior was over the northwestern edge of this rim, distant N. N. W. 30 miles, carrying us into the hydrographical basin of Hudson's Bay, in lat. 47 deg. 50 min. The first day's journey we rise 450 feet, the most of the height in the first hour from the lake. In this hour we pass over the rocks immediately bordering the lake, the Pottsdam sandstone and its accompanying trap intrusions and metamorphisms, and enter the Azoic slates lying underneath. The sandstone dips to the S. E. 10° to 20°—the slates lie nearly or quite vertical. They mainly belong to the argillaceous family, rarely siliceous, and are in various slates of metamorphism. They are rarely much elevated above the surface of the country, the Cloquet hills being an exception. From this elevation on the Mesabi hills, which form the water shed between the hydrographical basins of Lake Superior and Hudson's Bay, no rocks are to be seen. The country is one vast peat bog, in high water and wet weather, with ridges of land covered with white cedar, firs, spruce-pine, &c. Underneath lie beds of bog iron ore and peat, resting on finely laminated clays. The Mesabi hills rise a bold prominent feature of the landscape, running N. 70 deg. E. and S. 70 deg. W. North of this range, the rocks are still slates, but more highly altered than in the Cloquet hills, and near Lake Superior, having in them veins of granites of various colors, grades and varieties. Some of them are altered beds of sandstone, beds of magnetic, black and red oxides of iron; also numerous veins of quartz, some of which are argentiferous and auriferous. Farther north than I proceeded, there is another elevation of slates, which forms the divide between the waters drained into the Rainy Lake and Lake of the Woods Valley, and those flowing more directly northwards into Hudson's Bay. These three distinct and seperate elevations, formed, I think, as many distinct foci of metamorphism, to the old Azoic slates, the metamorphication greater, as we proceed northwards. Including the trap metamorphism immediately on the north edge of Lake Superior, underneath it and south of it, we have four systems within one hundred miles in a direct line from Superior at right angles to the trend of rocks. There is this similarity between the granites, syenites, and hornblendes of this region, and similar rocks in Canada East, Maine, New Hampshire, Vermont and sea shore States, that, they are, when found in place, in beds and veins, not as intruded masses, but merely as higher conditions of metamorphism of portions of the slate systems. It was a great pleasure to find here, a possible source for the boulders so often seen by me in my surveys and travels in Michigan, Indiana, Illinois, Iowa, and Wisconsin. Every one could be referred to its appropriate birth place. I noticed no greater or more prominent phenomena attributable to drift period in geology in lat. 47 deg. and 48 min. than can be seen on New York Island in lat 41 deg. 40 min.: the direction of the grooving and striating is not as regular as in the vicinity of your office. With you it is uniformly N.W., by N. Here it is from N.W. by N. to N and around to N.E., varying through a quadrant of the circle, more abundant, however, N. 10 deg. E. The mesabi upheaval runs N. 70 deg. E., the drift movement, then, was directly across it. In the gap of this range, through which the Upper Embanas flows, and in which lies the chain of seven beautiful gems of lakes, bears evidence of great erasion at this period, and of mighty currents flowing through. Boulders line the passage, and are seen far up the slope of hills. This range culminates in height at this point, and proceeding south-westward gradually falls off in height. At the divide between the waters of Mississippi and Lake Superior, it is met by another upheaval, running S. 70 deg. E., and N. 70 min. W., not so high, nor so prominent a feature of the topography of the country, but as far as the land surveys of the U. S. Government extends, is always recognizable. Mr. George Stuntz, surveyor of the land department of the government, communicated to me this discovery of his, made in running township lines. S.

☞ The experiment of making belting from paper has proved a success, and the article is now used in several manufacturing establishments. The belting resembles the genuine oak-tanned leather, and serves alike well in dry or damp atmosphere.

☞ Thirty per cent. of the population of England and Wales, as shown from the marriage register, are unable to write their names; and it is calculated that at least one million of children are unprovided with any means of education.

☞ Parties in Bridgeport, Ct., are engaged in getting out a novelty in the shape of a wagon-body. The entire body is made of rubber, hardened by the addition of tin and iron in the composition, and is cast in a mould.

☞ An eight-wheeled car, which the inventor claims one horse can draw, if it is loaded with twenty thousand pounds, is the latest Boston novelty. The object is to prevent friction in the running gear of the car.

MARKET REVIEW.

Gold and Silver Stocks are more active, and show a general advance. Black Hawk is held at $6; Con'd Gregory sells at $5 65; Edge Hill at $3 55; Harman, $2 40; Holman, 10c.; La Crosse, 50c.; Montana, s.30, 24c.; N. Y. Gold, 80c.; Benton, 50c.; Quartz Hill, $1 30; Reynolds, 1c.; Rocky Mountain, 45c.; Corydon, 50c.; Smith & Parmelee, $3 25@3 55. Quotations range as follows:

	Bid.	Asked.		Bid.	Asked
Alameda Silver	— 90	— —	La Crosse Gold	— 48	50
American Flag	— 60	75	Liberty Gold	— 5	6
Atlantic and Pacific	— 15	70	Manhattan Silver	125 00	— —
Bates & Baxter Gold	— 40	1 00	Midas Silver	— 75	1 00
Benton Gold	— 44	46	Montana Gold	— 23	30
Bobtail Gold	— —	3 00	New York	— 80	85
Black Hawk G	5 25	6 00	New York & Eld'o	— —	1 50
Bullion Consolidated	— —	1 00	Nye Gold	— 4	6
Columbian G. & S.	— 5	10	Owyhee Mining	10 00	— —
Combination Silver	55 00	70 00	People's G. & S. of Cal	— 20	40
Consolidated Gregory	5 60	5 65	Quartz Hill	1 25	1 30
Corydon Gold	48	60	Reynolds Gold	— 1	— —
Edgehill Mining	3 55	3 65	Rocky Mountain Gold	— 36	39
Gold Hill	— —	4 00	Seaver Gold	— —	— —
Gunnell Gold	1 20	1 45	Smith& Parmelee Gold	3 30	3 35
Gunnell Union	— —	40	Sensenderfer	— —	8 00
H'n G & S. bs	— —	92	Symonds Fork Gold	— 75	1 00
Harmon G. & S. bs	— —	10 00	Texas Gold	— 7	15
Holman	— 8	12	Twin Riv. Sil.	60 00	— —
Hope Gold	— 15	30	Vanderburg G	— —	75
Kipp & Buell Gold	— —	40	Yellow Jacket	— —	— —

Copper Stocks also show more life. Davidson sells at 50c. Quotations at the board rule as follows:

	Bid.	Asked.		Bid.	Asked.
Caledonia	....	10 00	Hancock	6 50	7 50
Canada	....	50	Hilton	....	1 00
Central	15 60	....	Isle Royale	....	5 00
Copper Falls	20 00	....	Knowlton	....	2 50
Davidson	48	55	Minnesota	....	5 00
Evergreen Bluff	....	3 00	Ogima	3 00	....
Franklin	16 50	....	Rockland	....	6 00
Gardiner Hill	....	1 40			

Petroleum Stocks, in sympathy with the other mining stocks, are somewhat more lively, although at lower rates, Pit Hole Creek excepted, which has advanced to 85c. Rynd Farm sells at 18c. The market is quoted:

	Bid.	Ask'd.		Bid.	Ask'd.
Beuchoff Run	2 00	2 25	N. Y. and Alleghany	....	2 75
Brevoort	....	50	Pit Hole Creek	85	1 00
Buchanan Farm	32	37	Rynd Farm	15	17
Bilven	....	....	Second National	....	....
Central	....	1 00	United Pet. Farms	....	12
Clinton Oil	75	1 50	United States	2 25	2 75
Manhattan	....	10	Union	1 75	....
National	....	3 00	Webster	....	....

Government Stocks are in moderate demand, and are less firm. The Assistant Treasurer has issued a notice that, after the 1st of February, 1868, the Government will reserve its right to redeem the Sixes of 1847, at its pleasure. The following are the market rates:

U. S. 6s, 1868	134¼@ —
U. S. 6s, 1868, coupon	134¼@ —
U. S. 6s, 1881, regular	108⅛@108¼
U. S. 6s, 1881, coupon	108⅛@108¼
U. S. 6s, 5-20s, 1862, regular	105¼@105⅜
U. S. 6s, 5-20s, 1862, coupon	108⅛@103⅜
U. S. 6s, 5-20s, 1864, coupon	105¼@106
U. S. 6s, 5-20s, 1865, coupon	106⅜@106½
U. S. 6s, 5-20s, 1867, coupon	104¼@104⅞
U. S. 5s, 1871, regular	114 @ —
U. S. 5s, 1871, coupon	116 @ —
U. S. 5s, 1871, end. coupon	114 @ —
U. S. 10-40s, regular	102⅛@102½
U. S. 10-40s, coupon	102⅛@102⅝
U. S. 7-30s, June, large	104¼@105

Miscellaneous Stocks.—Quicksilver Mining, 23¾@24; Mariposa Pref., 14@14½; Cumberland Coal, Pref., 34½@35½; New York Central, 121½; Erie, 74½; Hudson River, 139¾; Reading, 93½; Michigan Southern, 86⅞; Pittsburg, 91½; Northwestern, 59; Northwestern Pref., 72½; Rock Island, 96½; Fort Wayne, 99½; Ohio and Mississippi Certificates, 31½; Pacific Mail, 113½; Adams' Express, 76⅛@76¾; American, 73½@74¼; United States, 76½@77¼; Wells, Fargo & Co., 46; Merchants' Union, 35 p. ct., 37⅛@37¾.

Foreign Exchange is somewhat less firm. Transactions could probably be made at 1-6 per cent. below the rates for Wednesday's steamer. The supply of bills against shipments of bonds have slightly relieved the market, but drawers are anticipating a demand from merchants who have been deferring remittances through the advance in gold, and are therefore comparatively firm.

London, (prime bankers')60 days'	110 @110¼
London, (prime bankers') sight	110¾@110¾
London, prime commercial	— @ —
Paris, (bankers') long	5.13¾@ 5.12½
Paris, (bankers') short	5.11¼@ 5.10
Antwerp	5.16¼@5.13¾
Swiss	5.16¼@5.13¾
Hamburg (bankers')	36¼@36½
Amsterdam (bankers')	41¾@41¾
Frankfort (bankers')	41¼@41½
Bremen (bankers')	79¾@79¾
Berlin (bankers')	72¼@72¾

Gold, Etc.—Gold is firm at 137¼@137¾. The probabilities of the suspension of contraction by Congress has given a decidedly firmer tone to the market, and induced late yesterday and this morning a considerable amount of covering sales.

American silver sells at 5½@6¼ cents below the price of gold. Mexican dollars are quoted at 103@103½ in gold.

The steamship Deutschland from this port on Wednesday, for Europe, took out $431,840 in specie.

The shipment of gold by Thursday's steamer amounted to about $275,000. Saturday's export promises to be important, as gold intended for the Continent has been held back for the French steamer sailing on that day. From present indications it is likely to be about $1,000,000, chiefly in bars.

The steamship Montana, which sailed from San Francisco for Panama on the 1st inst., $995,000 in treasure, $952,000 of which was for New York.

Following is an interesting table showing comparatively our foreign exports of Specie and Bullion:

Months.	1864.	1865.	1866.	1867.
January	$5,459,079	$3,184,853	$2,706,336	$2,551,351
February	....	3,015,367	1,023,291	1,807,030	2,124,461
March	1,800 559	381,913	1,045,039	1,891.141
April	5,883,077	871,249	588,875	2,261,283
May	6,460,930	7.255.071	23,744.194	9.043,154
June	6,533,109	5,199,472	15,890,956	6,724,272
July	1.947,329	723,986	5,821,459	13.519,894
August	1.001.813	1,554,398	1,587,851	1.714,594
September	2.835,398	2.494,973	834,550	2.201.958
October	2,517.121	2 516.226	1.463,450	1,182.031
November	7.267,362	2,046,180	3,776,690	1,733,261
December	6,104,177	2,752,161	3,297,270	6,854,548
Total	$50.825,621	$30.003,683	$62,553,700	$51,801,948

Money continues in good supply, and call loans are easy at 6 per cent. The low balance in the Treasury is likely to be recruited during the present month by the semi-annual payments of the banks and bankers, on account of taxes. According to a statement just presented by the Secretary of the Treasury to Congress, these payments amount to about $13,000,000 for the half year.

Discounts are moderately active at 7@8 per cent. for prime names.

Copper.—With the rise in gold in the early part of the week, the price advanced to 22½ cts. for Detroit; 22½–¾ for Portage Lake; 22¼ for Baltimore. Sales 600,000 to 700,000 lbs. The market closes quiet, with more offering. The report of the destruction of the Portage Lake Smelting Works is unfounded. They were damaged by fire, but not destroyed.

Tin.—A concession on the part of holders led to sales of 1,000 lbs. Straits at 23¾ cts. gold. To-day's quotation is 24 cts., Banca 26cts., English 23¼ cts.

Spelter unchanged; 6¼ cts, gold for Silesian, without business.

Lead 6¼ cts. for ordinary foreign. Sales of 300 tons in lots, at 6 45-100@6 55-100.

Scotch Pig Iron is held at $38 for Glengarnock, from yard. American Pig Iron is unchanged.

Petroleum—Is quiet at 10½@11c. for crude, and 24½c. for middling uplands.

Receipts for the week ending Jan. 7	pkgs	6 601
Exports for the week	gails	342,085
Do. from January	do.	342,085
Do. same time last year	do.	882,402

THE IRON TRADE

NEW YORK, January 10, 1868.

The iron market remains in the same stagnant condition. Sellers offer inducements, but buyers are rather backward. The demand for pig is slight and continues to be confined to small lots. The business of the week has been very trifling, and there have been no sales of importance. Scrap, amounting to 200 tons, was sold in two lots, one of which brought $37, and the other a higher sum. Prices are merely nominal. In manufactured iron the market is firmer, and the demand slightly more active.

WEEKLY STATEMENT OF NEW YORK IRON IMPORTS.

The following table shows the quantity and value of iron imports at the New York Custom House, for the week ending and including Jan. 4, 1868:

	Quantity.	Value.
Iron, Hoop, tons	20	905
Iron, Pig, tons	938	13,038
Iron, Railroad bars	5,428	30,686
Iron, Sheet, tons	15	1,284
Iron, other, tons	1,392	38,508
Nails	1	230
Old metal	..	6,316
		$1,467

Annual Statement of New York Iron Imports for 1867.

	Quantity.	Value.
Anvils	809	10.227
Chains and Anchors	764	289,303
Iron, hoop. tons	3,257	154,120
Iron, pig, tons	68,848	1,024,228
Iron, railroad bars	338,490	2,149.685
Iron, sheet, tons	8,253	634.467
Iron, tubes	4,635	22,000
Iron, other, tons	67,022	2,436,417
Nails	326	13.383
Old Metal	....	220.713
Total value	....	$6,957,543

Comparative Statement of Iron and Steel Imports at New York for each of the last Four Years.

	1864.	1865.	1866.	1867.
Iron, bars	3,427,850	1,134.393	2,200.949	2,436.417
Iron, pig	803,788	385,788	879.733	1,024.228
Iron, railroad	3,687,910	1,558.334	1,492.533	2,149 685
Iron, sheet	383,975	160,018	606,948	634,427
Steel	2,012,197	1,624,755	2,949,449	3,248,602

Comparative Prices of Iron.

The following are the comparative prices of Iron in first hands at New York on the first of January in each of the last four years:

	1865.	1866.	1867.	1868.
Scotch pig, ton	63 00	51 50	47 00	36 00
English bar, ton	200 00	120 00	115 00	85 00
American pig, ton	59 00	51 00	49 00	39 00

Lehigh Valley Iron Trade.

The following table shows the amount of Pig Iron transported over the Lehigh Valley Railroad for the week ending Jan. 4, 1868:

From	Tons.	Total
Carbon Iron Co	280	280
Lehigh Valley Iron Co	290	290
Thomas Iron Co	810	810
Lehigh Crane Iron Co	270	270
Allentown Iron Co	5	5
Robert Iron Co	335	335
Glendon Iron Co	380	380
Other shippers	186	186
Total	2,556	2,556

Shipments of Black Band Iron Ore,

Sent over the Mill Creek Railroad, Pa., for the week ending Saturday, December 28, 1867:

Week	68 18
Previously	5,034 11
	5,103 09

The following table shows the annual statement for 1867 of Iron Ore and Pig Iron shipped over the Marquette & Ontonagon (Michigan) Railroad:

San Francisco Iron Imports from Dec. 1 to Dec. 15, 1867.

Iron, Railroad, bars	6,767
" Pig, tons	923
" Bar, bars	30,644
" " bundles	3,729
" Sheet, bundles	2,428
" " cs	126
" Hoop, bundles	592
" " cs	2
" Plate, pits	1,826
" Tubes, no	395
" " bundles	228
" Old, packages	40
" Pipe, bundles	589
" " pieces	2,927

Annual Iron Shipments.

	IRON ORE. Tons. Shipments from Marquette.	Tons. Shipments to Furnaces.	Tons. Total.
Lake Superior Iron Co	108,560	26,074	134.634
Pittsburg & Lake A. Iron Co	51,969	234	52,203
Cleveland Iron Co	36,912	5,211	42,123
Washington Iron Co	24,655	4,281	28,936
Jackson Iron Co	139	14,465	14,604
New England Iron Co	9,944	225	10 169
Marquette Iron Co	5,895	....	5,895
Edwards Mine	5,578	....	5.578
Champion Mine	....	276	276
Aggregate tons Iron Ore			294,418
PIG IRON.			
Morgan Iron Co			5,890
Greenwood Iron Co			5,561
Collins Iron Co			4,630
Michigan Iron Co			4,131
Bancroft Iron Co			3,051
Iron Cliffs Co			57
Aggregate tons Pig Iron			23,320
SUMMARY.			
Iron Ore			294,418
Pig Iron			23 320
Total tons			317,738

Comparative Production of Pig Iron in the United States from 1810 to 1866, Inclusive.

Years.	Prod'n in tons.	Increase of Production, per cent.	Decennial Incr'se of Population, per cent.	An'l Inc. in Production of Iron.	An'l Incr'se of Population.
1810	54,000	.....	.....	.....	.....
1828	130,000	140. in 18 years.	.....	.....	.....
1830	165,000	211.11 " 20 years.	77. 7 in 20 years.	10.56 per ct.	3.88 per cent
1832	200,000	21 " 2 years.	.....	.....	.....
1840	347,000	110 30 " 10 years.	32.67 in 10 years.	11 per ct.	3.26 per cent
1845	486,000	49 " 5 years.	.....	.....	.....
1850	564,755	62.7 " 10 years.	35.87 in 10 years.	6.27 per ct.	3.58 per cent
1855	754,178	33.7 " 5 years.	.....	.....	.....
1860	913,770	61.8 " 10 years.	35.46 in 10 years.	6.18 per ct.	3.54 per cent
1864	1,135,497	24.26 " 4 years.	.....	6.06 "	3 "
1866	1,334,704	46 " 6 years.	.....	7.66 per ct.	3 "

Increase of population from 1810 to 1867, 410 per ct., or 7.3 per ct. per annum. Increase in production of pig iron from 1810 to 1867, 2371 per cent., or 42⅛ per cent. per annum.

Miles of Railroad in the United States in each Year since 1850.

The following statement exhibits the number of miles of railroad actually completed and in operation in the United States in each year since 1850, the quantity of rails manufactured, and the quantity imported into the country during the same period. The table has no reference to the passenger railroads in use in the principal cities, nor is the second track on any of the railroads taken into consideration. Perhaps 25 or 30 per cent. may be added for the double track, sidings and turn-outs.

Years.	Railroads. Miles completed.	Rails manufactured in United States. Tons of 2,000 lbs.	Rails imported into United States. Tons of 2,000 lbs.
1851	11,027	50.693	226,350
1852	13.497	62.478	294,750
1853	15 672	87.864	358,794
1854	17,398	108,016	339,439
1855	19,251	138.674	153 019
1856	22.625	180,018	185.594
1857	25,090	161,918	215.166
1858	26.755	163.712	90,894
1859	28,971	195.454	83,953
1860	30,593	205,038	146.610
1861	31,769	189,518	89,388
1862	32,471	213 912	10,186
1863	33,860	275,763	20,506
1864	34,442	335,369	142,457
1865	35,361	356,292	89,642
1866	36,996	417,933	76,216
1867	38,922	....	100,000†

Market Prices.

NEW YORK, Jan. 10, 1868.

DUTY.—Bars, 1 to 1¼c. per lb. ; railroad, 60c. per 100 lbs. ; boiler and plate, 1¼c. per lb. ; sheet, band, hoop and scroll, 1¼ to 1¾c. per lb. ; pig, $9 per ton ; polished sheet, 3c. per lb. Payable in gold.

Anthracite, No. 1, best.	$39 00@40 00	6 to 12x¼ to 5-8	165 00
" " 2x, fiiry,	36 00 38 00	Common Iron	
" Grey Forge,	30 00 36 00	¾ to 2 in. round and sq.	95 00
Scotch Pig, from vessel,	35 00 — —	1 to 6 in. wide by ¾ to 1 th.	95 00
Charcoal, coal blast	50 00 60 00	1 to 6 in. wide x¼ to 5-16 th.	105 00
Old Wrought sc'p, fm yd.	40 00 — —	¼, 9-16, 5-8, 11 16, r'd & sq.	105 00
" " " fm. vsl.	37 00 — —	2½ to 3 inches	105 00
English rails, gold	52 50 53 00	Refined Iron.	
American " at works	78 00 80 00	¾ to 2 in. r'd and sq.	105 00
Nails and spikes	5 75	1 to 6 in. wide x ¾ to 1 th..	100 00
Old Railroad Iron	45 00@....	3¼ and 3½, round and sq.	115 00
Hoops, ¾ per ton	$190 00	Rods—5-8 and 11-16, round &	
" ⅜ "	160 00	sq., per ton	105 00
" ⅞ "	150 00	½ and 9-16 round & square.	110 00
" 1 "	140 00	7-16, round and square	120 00
" 1¼ "	137 50	⅜, " " "	125 00
" 1¼ to 2 per ton	137 50	5-16, " " "	130 00
Scroll Iron—¾x14 per ton	180 00	¼, " " "	135 00
" 12 "	170 00	3-16, " " "	165 00
" 10 "	160 00	Horse Shoe Iron	127 50
" 3-16 "	150 00	Band—1 to 6 in. x 3-16 to No.	
" ¼ "	140 00	10	132 50
" ¾x14 "	160 00	1 to 6 in. x No. 11 and 12	132 50
" 12 "	160 00	Ovals and half Rounds.	
" 10 "	150 00	¾ to 1¼,	127 50
" 3-16 "	140 00	⅝ & 11-16,	132 50
" ¼ "	135 00	½ & 9-16	137 50
" ⅝x14 "	150 00	Nail Rods, per lb.	
" 12 "	150 00	"	
" 10 "	140 00	"	9@10¼
" 3-16 "	135 00	Norway Shapes	8¼c
" ¼ "	132 50	Spring Steel	10¼c
Swed'h I'n, ord'y sizes, ⅝ to		Tire " ⅞ to ¾x¼ & 5-16	10¼c
2 in. sq., per ton	155 00	Toe Cork Steel	10¾c
1¼x¾ to ⅝ and ¾ in sq.	160 00	Sleigh Shoe Steel	10¾c
1¼x⅜ to ½	165 00	Plow Steel—6 to 14x¾ to ⅜	11c

[From Boston Shipping List.]

BOSTON, Jan. 8, 1868.

Swedish—common ass'd	$150@155	Scotch Pig, No. 1	
English—com	90 95	Gartsherrie	$42@43
do refined	100 105	No. 1, other brands	40 42
do sheet, per lb	6¼@10c.	American, No. 1	40 45
Russia, sheet	15@17c		

[From the Pittsburgh Commercial.]

PITTSBURGH, Jan. 4, 1868.

Pig Iron and Blooms.—As anticipated in our last report, the market for crude irons continues dull. Many of the iron mills of the city having suspended operations for a time, the consumption of crude irons has fallen off largely and the volume of sales is unusually light. Many of the foundries having either curtailed or entirely suspended operations for an indefinite time, renders foundry descriptions of raw irons especially dull. Total sales 1,799 tons pig iron, and 10 tons blooms.

We quote the following sales :

BITUMINOUS COAL SMELTED FROM LAKE SUPERIOR ORE.

200 tons Open Grey Forge, deliverable at furnace	$33 00—4 mos.
224 tons, White and Silvery, low grade	35 00—60 days
100 tons Gray mixture with native ore	40 00—4 mos
100 tons	private terms
20 tons No. 1 Foundry	43 00—cash
50 tons do do	44 00—cash

ANTHRACITE.

75 tons Grey Authracite Forge	$39 00—7 mos
45 do do do	39 00—6 mos
250 do do Neutral do	private terms
20 do No. 2 Foundry	43 50—Cash
50 do No. 1 Foundry	47 00—4 mos
100 do Mottled Forge	35 25—Cash
100 do Grey do	38 00—4 mos
100 do Mottled do	35 00—4 mos
40 do do do	37 00—4 mos

COKE.

125 tons Alleghany Coke	private terms
100 do Red Bank	$38 00—6 mos

BLOOMS.

10 tons Juniata	$97 50—Cash

Iron Bars and Nails.—During the past week orders have been small and the trade light—attributable in a great deal to the holidays. It is anticipated that during the next week there will be a fair trade doing. Prices remain unchanged. Nearly all the mills suspended on account of the holidays, will resume operation by Monday next.

LONDON, Dec. 21, 1867.

(From the London *Mining Journal*.)

Bars, Welsh in Lond.	£6 10 0@..	To arrive	10 5 0 10 10 0
Ditto to arrive	6 10 0	Do. railway, Wales.	£5 0 0@£5 10 0
Nail rods	7 0 0 7 10 0	Do, merch. Tyne or	
" Stafford in Lond.	7 10 0 8 10 0	Tees	6 10 0 .. ....
Bars	7 10 0 9 10 0	Pig, No. 1, in Clyde.	2 13 9 3 1 0
Hoop	8 10 0 9 12 6	Do. f.o.b. Tyne, Tees.	2 9 6 .. ....
Sheets, single	9 5 0 10 0 0	Do. Nos 3, 4, f.o.b. do	2 6 6 2 7 0
Pig, No. 1, in Wales.	3 15 0 4 5 0	Railway chairs	5 10 0 5 15 0
Refined metal, ditto.	4 0 0 5 0 0	" spikes	11 0 0 12 0 0
Bars, common, ditto.	5 15 0 6 0 0	Indian Charcoal Pigs	
Do. Swd. in London	10 5 0 10 10 0	in London	7 0 0 7 10 0

STEEL.

Swed., kegs (rolled)	14 5 0	Swed., in faggots	16 . . ..
" (hammered)	15 5 0 15 10 0	English, spring	17 0 0 23 . 0

THE COAL TRADE.

NEW YORK, January 10, 1868.

The regular auction sale of Scranton coal took place, according to announcement, last Wednesday, and resulted in a decline which has produced something of an apathy in the market. The attendance was fair but the bidding was not spirited, proving that the coal was not wanted. We subjoin a tabulated statement of the result compared with that of the last sale, which shows an average decline of 28¾ cents in lump, 11½ cents in steamboat, 32½ cents in grate 40 cents in egg, 16¾ cents in chestnut and an increase in stove of 7⅛ cents :

Tons.	Jan. 8, 1868.	Nov. 27, 1867.
6,000 Lump	$3 25 @3 62½	$3 50@3 75
7,000 Steamboat	3 50 3 72½	3 55 3 80
8,000 Grate	3 52½ 3 67½	3 80 4 50
4,000 Egg	3 90 4 00	4 00 4 70
9,000 Stove	5 12½ 5 27½	5 00 5 25
8,000 Chestnut	3 57½ 3 65	3 50 4 50

In the retail trade there is a dullness, which is probably partly attributable to this result. The demand for stove, however, continues very good, as is apparent from the advance obtained. Prices remain unchanged. Freights are unsteady, but disposed to advance. The Pennsylvania Coal Company announce that their contract prices will in future be subject to a monthly, instead of merely an annual, change.

The following table shows the quantity of Coal shipped over the principal roads for the week ending January 4, 1868, compared with that shipped the same time last year :

	1866. WEEK.	1866. TOTAL.	1867. WEEK.	1867. TOTAL.	DECREASE.
Phil. & Reading R.R.	29,555	128,688	24,638	221,706	93,018
Schuylkill Canal	.....	.....	.....	.....	.....
Lehigh Val. R. R	12,214	55,018	33,916	165,136	110,117
Lehigh Canal	.....	.....	.....	.....	.....
Del & Hudson	.....	.....	.....	.....	.....
Scranton North	4,511	4,511	5,893	5,893	1,382
Scranton South	15,928	15,928	8,646	8,646	7,282
Penn'a Coal Co. Rail	11,668	11,668	8,323	8,323	3,345
" " Canal	.....	.....	.....	.....	.....
Wyoming North	.....	.....	.....	.....	.....
Wyoming South	.....	.....	.....	.....	.....
Shamokin	1,423	1,423	2,788	2,788	1,365
Trevorton	.....	.....	912	912	.....
Short Mountain	506	506	746	746	240
L. V. Co	342	342	765	765	422
Broad Top	2,892	2,892	2,084	2,084	808
Williamsto'n	.....	.....	.....	.....	.....
Total	79,039	220,976	88,711	416,999	.....
1866	.....	.....	79,039	220,976	.....
Increase	.....	.....	9,672	196,023	.....

The following is the total amount of Coal shipped North and South from Scranton for 1867 and 1866 :

	Shipped South.	Shipped North.
1867	1,203,663	575,657
1866	1,085,449	433,570
Increase of 1867	118,214	82,087

The following are the shipments of the Pennsylvania Coal Co. by rail and canal for 1867 and 1866 :

	Rail.	Canal.
1867	840,560	21,139
1866	510,475	24,909
Increase of 1867	330,085	....
Decrease "	....	3,740

Lehigh Coal Trade.

SHIPPED BY RAILROAD FOR THE WEEK ENDING JANUARY 4, 1868.

WHERE SHIPPED FROM.	WEEK. Tons. Cwt.	PREVIOUSLY Tons. Cwt.	TOTAL. Tons. Cwt.
WYOMING REGION.			
Franklin Coal Co	....	....	....
Audenreid	9 17	40 09	50 06
Lehigh & Susquehanna	....	....	....
Germania Co	391 12	474 10	866 02
Wilkesbarre Coal & Iron Co	950 04	2,669 03	3,619 07
Warrior Run	423 06	738 01	1,161 07
Parrish & Thomas	1,288 07	2,543 13	3,822 00
New Jersey	376 19	976 13	1,353 12
Union	113 10	242 02	355 12
Wyoming Coal & Transportation Co	524 18	571 07	1,096 05
Newport C. C	....	....	....
Morris & Essex Mutual C. C	130 17	514 01	644 18
Consumers	....	83 12	....
Everhart C. Co	....	....	152 14
Plymouth C. C	....	182 14	....
H. B. Hillman & Son	259 15	790 15	1,050 10
Bowkley, Price & Co	51 08	98 00	149 08
Mineral Spring	697 18	901 07	1,599 05
Valley Coal Co	....	....	....
Enterprise Colliery (J. H. Swoyer)	319 05	1,729 13	1,948 18
G. B. Linderman & Co	....	....	....
Washington C. C	....	....	....
West Pittston	....	....	....
Barclay Coal Co	....	....	....
Shawnee	229 18	260 16	490 14
Consumers Coal Co	118 11	259 08	461 11
Harvey & Bro	175 00	168 09	343 09
Other shippers	....	....	....
			19,196 18
Total	5,961 05	13,234 13	
B. M. REGION.			
New York & Lehigh	1,697 14	3,983 03	5,680 17
Honey Brook	1,038 00	7,373 10	8,411 10
German Penna. Coal Co	880 11	2,806 16	3,687 07
Spring Mountain	992 15	5,469 00	6,461 15
Coleraine	902 18	2,656 04	3,559 02
B. Meadow, D. W	....	....	....
John Connery	....	....	....
Lehigh Zinc Co	....	....	....
Spring Brook	....	....	....
Other Shippers	6 00	25 05	31 05
Total	5,517 18	22,313 18	27,831 16
HAZLETON REGION.			
Central Coal Co	....	....	....
Ashburton Co	27 03	....	27 03
Mount Pleasant	441 12	1,400 14	1,842 06
Hazleton	5,255 08	15,511 02	20,766 10
East Sugar Loaf	2,678 10	8,559 04	11,237 14
Mount Hall	....	219 14	219 14
Latimer (A. Pardee, Jr., Bro. & Co)	....	1,694 08	1,694 08
Stout Coal Co	....	3,105 09	3,105 09
Harleigh	1,038 11	3,988 00	5,026 11
Ebervale C. Co	522 15	6,868 14	7,391 09
Jeddo (G. B M. & Co)	3,104 11	8,510 02	11,614 13
Woodside, J. C. Co	91 11	679 03	770 14
Highland Coal Co	1,336 04	4,570 12	5,906 16
Cross Creek	146 17	2,129 06	2,276 03
Council Ridge	2,125 07	5,909 11	8,035 00
Buck Mountain	195 16	3,444 02	3,639 18
Other shippers	....	....	....
Total	16,964 07	66,590 91	83,554 08
UPPER LEHIGH REGION.			
Upper Lehigh Coal Co	1,560 19	5,488 14	7,049 13
Other shippers	....	....	....
Total	1,560 19	5,488 14	7,049 13
MAHANOY REGION.			
Trenton Co	....	....	....
Mount Etna	309 17	235 04	545 01
Mahanoy Colliery	253 01	1,256 12	1,509 13
Delano	....	....	....
Glendon Colliery	888 09	1,172 19	2,061 08
Primrose Colliery	....	550 05	550 05
E. S. Silliman	1,748 02	7,664 03	9,412 10
McNeal Co	....	2,113 11	2,113 11
Knickerbocker	156 07	3,485 19	3,642 06
Thomas Coal Co	14 03	2,147 16	2,161 19
Williams & Herring	....	600 13	600 13
New Boston C. C	170 14	3,394 17	3,565 11
Shamokin C. C	....	....	....
Caledonia M. and M	371 16	954 01	1,325 17
Coal from Catawissa Railroad	....	....	....
Other shippers	....	15 13	15 13
Total	3,912 09	23,591 18	27,504 07
Grand total	33,916 18	131,219 04	165,136 02
Same time last year	12,214 02	42,804 08	55,018 10
Increase	21,702 06	88,414 16	110,117 12
Decrease	....	....	....

Schuylkill Coal Trade.

BY RAILROAD, FOR WEEK ENDING JAN. 9, 1868.

	Railroad.	Canal.
St. Clair	20,005	.....
Port Carbon	1 547	.....
Pottsville	357	.....
Schuylkill Haven	743	.....
Auburn	51	.....
Port Clinton	1,935	.....
Total for week	24,638	.....
Previously this year	197,068	.....
Total	221,706	.....

Cumberland Coal Trade.

From the Alleganian.

COAL TRADE BY RAILROAD.—Statement of Coal shipments over the Baltimore and Ohio Railroad for the week ending Jan. 4, 1867 :

From George's Creek via Piedmont.	Tons.
George's C. & I. Company	357 09
Central do	28 05
Atlantic do	703 00
Piedmont do	259 13
Swanton do	107 01
Barton do	....
Potomac do	787 00
George's C M do	501 16
Franklin do	493 19
Hampshire do	530 08
American	795 04
Total	4,512 25

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

At New York, January 11, 1868.

Schuylkill R. A., choice	$5 75@6 00	Lehigh Broken	5 25 ....
" Ordinary	5 25 5 50	" Egg	5 25 ....
" W. A., Lump	5 25 5 50	" Stove	6 80 ....
" Steamboat	.... 5 25	" Chestnut	4 20 ....
" Broken	....	Wilkesbarre Lump	b 25 ....
" Egg	....	" B'ken & Egg	5 25 ....
" Stove	5 50 5 75	" Stove	5 50 ....
" Chestnut	4 00 4 25	" Chestnut	4 75 ....
Lehigh White Ash Lump	5 37 ...		

SPECIAL COALS.—DEALERS' QUOTATIONS.

Diam'd Vein R. A., Sch'kill	....	H. Heils, E. S'klin, Lorb	5 50 ....
Locust Dale W. A., "	....	New England Red Ash	$5 25 ....
Honey Brook " Lehigh	5 50	Broad Mountain	5 25 ....
Harleigh " "	5 50	Wyoming	5 00 ....
Spring M'n " "	5 50	McNeal Co	5 50 ....
Sugar Creek " "	5 50	Locust Mount'n (Repplier)	550 ....
Ashburton " "	5 50	Duncan Red Ash "	6 00 ....
Fulton White Ash	5 50	W'barre Coal & Iron Co	5 25 ....
Stout	5 50	New Burgh Orrell Gas Coal	9 00 ....
Old Co.'s " "	5 50	Despard Gas Coal	9 00 ....
Buck Ridge W. A., Sh'kin	5 00		

Dealers in these Coals may be found in our advertising columns.

At Philadelphia, January 11, 1868.

Lehigh Lump and St'mb't.	$5 00@....	Schuylkill Chestnut	2 75 ....
" Broken and Egg	5 00	Locust Mount Lump and	
" Stove	5 00	Steamboat	4 25 ....
" Chestnut	3 75 ...	" Broken	4 25 ....
Schuylkill R. A. Prepared.	4 25 4 50	" Prepared	4 25 ....
" Chestnut	2 75	" Chestnut	2 87 ....
" W. A. Lump and		Lorberry Coal	4 25 ....
Steamboat	4 25	Shamokin	4 75 ....
" Broken	4 25	Franklin, (Lykens Valley)	4 75 ....
" Egg and Stove	4 25	Broad Top	4 75 ....

Scranton Coal at Elizabethport, January 11, 1868.

(Corrected weekly by D. L. & W. R. R. Co.)

Lump	$4 25@....	Egg	5 00 ....
Steamer	4 50	Stove	5 50 ....
Grate	4 75	Chestnut	4 40 ....

Prices for Pittston Coal at New York, January 11, 1868.

(Corrected weekly by Penna. Coal Co.)

Lump, per ton of 2240 lbs.	$5 40@....	Egg " " "	5 40 ....
Steamer, " " "	5 40	Stove " " "	5 60 ....
Grate " " "	5 40	Chestnut " " "	4 90 ....

Lackawanna at New York, January 11, 1868.

Lump	$5 50@....	Grate	5 75@....
Steamer	5 50@....		

Lehigh Coal at Elizabethport, January 11, 1868.

Lump	5 50@....	Chestnut	4 50 ....
Steamboat and Brokenc	5 25	Stove	5 50 ....
Egg	5 25		

At Baltimore, January 11, 1868.

Wilkesbarre & Pittston W. A. by cargo or car	$5 50@5 75	From wharf or yard, 75c. to $1 per ton additional.	
Lykens Valley R. A. by cargo or car	5 75@ 6 25	Retail, del'd, per 2.240 lbs	7 00@7 75
Sunbury & Shamokin R. or W. A. by cargo	5 50 5 75	George's C'k and Cumberland f. o. b. at Locust P't for shipping	4 35@5 00

At Havre de Grace, Md.

Wilkesbarre or Pittston, W. A., on board	$4 85@5 10	Sunbury or Shamokin, R. or W. A., on board	....@5 25
		Lykens V'y. R. A. on b'd.	5 60@5 85

The above rates are only nominal. Shipping at this port is suspended for the season.

At Georgetown, D. C.

George's Creek and Cumberland on board	$4 25@ 4 50

Wilkesbarre Coal at Elizabethport, January 11, 1868.

(Corrected by Wilkesbarre Coal & Iron Co.)

Lump	$4 50	Egg	5 00 ....
Steamer	4 50	Stove	5 25 ....
Broken	4 75	Chestnut	4 50 ....

Ten cents additional on shipments from Jersey City.

Prices of Provincial Coals.

[CORRECTED WEEKLY BY LOUIS J. BELLONI, JR., 43 PINE STREET.]

Duty $1.25 per ton.

Block House (on board)	$2 00 gold	Little Glace Bay "	1 87½"
Gowrie "	1 75 "	International Co.'s "	1 75 "
Lingan "	1 75 "	Slack Coal, B. H., "	75 "
Sydney "	2 25 "	" L. G. B.,	1 00 "
Pictou "	2 25 "		

Prices of Foreign Coals.

Duty $1.25 per ton.

Corrected weekly by PARMELEE BROS., 32 Pine Street, N. Y.

Liverpool Gas Caking	$11 00	Liverpool House Cannel	—@20 00
" " Cannel	14 00	" " Orrel	16 00@18 00

Per ton 2240 lbs., Ex. ship.

PRICES FROM YARD :

Liverpool Orrel, screened	$18@20
Liverpool Cannel, scr'd	22 00@— —

per ton 2000 lbs. delivered.

Coal Freights.

(Corrected Weekly.)

From Baltimore.

To Philadelphia	$1 40@— —	Boston	2 25@ 2 50
New York	2 10 — —	Sound Ports	2 25@ 2 50
Washington	1 10 — —	Norfolk	1 00@— —
Annapolis	75 — —	Richmond	1 80@— —

From Elizabethport.

Albany	$ 90@— —	New London	1 50@— —
Boston	2 25 2 00	Newport	1 75 — —
Bridgeport	1 25 — —	New York	55 60
Fall River	1 75 — —	Norwalk	1 25 — —
Hartford	1 50 — —	Norwich	1 65 — —
Hudson	1 00 — —	Pawtucket and towing	2 00 — —
Lynn	— — — —	Portland	2 25 — —
Middletown	1 25 — —	Portsmouth	2 15 — —
New Bedford	1 75 — —	Providence	1 75 — —
Newburyport	2 50 — —	Salem	2 25 — —
New Haven	1 25 — —	Taunton	1 40 — —

From Washington, N. J.

Hackettstown	$ 58	Iron Dale	$ 1 19
Waterloo	81	Dover	1 24
Stanhope	90	Paterson	1 30
Port Morris	99	Pompton	80
Rockaway	1 32	Bloomfield	1 80
Denville	1 33	Newark	2 00
Boonton	1 44	Belleville	2 10
Little Falls	1 70	Communipaw	2 10
Drakesville	1 08	Jersey City	2 20
Dickerson's Basin	1 11	New York	2 20

From Georgetown or Alexandria.

To Philadelphia	$1 50 — —	Boston	2 75 2 50
New York	2 15 — —	Sound Ports	2 25 2 50

Foreign Freights.

New Castle and Ports on Tyne	17 keel.
Liverpool	12 6@15s. ton.

BOSTON STOCK MARKET.

BOSTON, January 8, 1868.

Latest advices by mail (Jan. 9) report prices of mining stocks bid in Boston as follows :

Copper Falls	20	Huron	—
Allouez	2¼	Boston Water Power	22
Calumet	—	Isle Roval	—
Hecla	28	Minnesota	—
Canada	—	Quincy	18
Franklin	12	Cary Improvement	7⅛
Hancock	5¼	Rockland	—

Sales at Boston Stock Exchange, January 8.

300	shares	Water Power	b.30 23	200	shares	Humboldt	50
312	do	do	22¼	150	do	do	52
100	do	do	22¼	150	do	Pewabic	5¼
100	do	do	b.30 22¾	600	do	Ophir G	1 55
100	do	Caary Imp	b.30 7¾			SECOND CALL.	
100	do	Allouez	2¼	100	do	Pewabic	5
250	do	Copper Falls	20	100	do	Water Power	22⅛
250	do	do	b.30 20¼	150	do	Franklin	10¼
200	do	do	b.60 20¾	300	do	do	b.60 11
100	do	do	s.10 20	300	do	do	10¾
300	do	Hancock	5¾	150	do	do	b.30 11
50	do	do	5¾	150	do	do	10¾
50	do	do	b.60 6	150	do	do	b.30 11
100	do	do	b.30 6				

SAN FRANCISCO STOCK MARKET.

A Telegram from San Francisco, dated the 8th inst., to MESSRS. LEES & WALLER, Bankers, 33 Pine street, this city, quotes Nevada silver and other stocks as follows :

STOCKS.	Bid per ft.	STOCKS.	Bid per ft.
Gould & Curry	350	Belcher	125
Savage	2,200	Imperial (per share)	160
Chollar Potosi	150	Alpha	600
Ophir	60	Kentuck	250
Hale & Norcross	1,350	Cal. Steam Navigation Co	84
Crown Point	750	Cal. State Telegraph Co	31
Yellow Jacket	750	Greenbacks	75

Weekly Slate Trade Circular.

NEW YORK, January 8, 1868.

The Slate Trade is about over for the season in this section. The high rates of transportation will induce all who can to hold back the work until spring. Meanwhile the quarrymen have reduced wages, and are carrying a larger stock than ever before, with the almost certain prospect of a low market in the spring.

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WESTERN & COMPANY, PROPRIETORS.

R. W. RAYMOND, EDITOR.

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Mr. T. P. PEMBERTON is editor of the Mechanical Department and agent for the AMERICAN JOURNAL OF MINING.

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NEW YORK, SATURDAY, JANUARY 11.

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ALL SORTS.

THE NATIONAL SCHOOL OF MINES.—IV.

The opponents of a national school are in the habit of saying that its place can be better supplied by private or State schools. This aspect of the subject will receive our attention in the present article.

In the first place, it must be remembered that State schools are also opposed by many, who would turn the work over to private schools only. If the propriety of State schools is admitted, then the principle of "Government interference" in matters of education is acknowledged; and it only becomes a question between the State and the Federal Governments. We must therefore consider, first, whether a national school of mines would be better than private schools, and, second, whether it would be preferable to schools established by the several States.

We do not underrate the advantages of private schools. On the contrary, we highly esteem them, and rejoice in their prosperity. It is a curious fact, moreover, that private schools always flourish best in a community where public schools are established. The diffusion of popular education stimulates all institutions of learning. On the other hand, it has often been observed that, where the higher branches of education are concerned, the multiplication of schools is an evil. Too many of our "one-horse" American colleges are illustrations of this principle. We see all the paraphernalia of trustees, faculty, curriculum, and diplomas; but the students are few, the professors are poorly paid, and the whole institution suffers from chronic weakness and decay. Everybody knows that one strong college does more than two weak ones.

Now, there is work enough in the United States for twenty schools of mining nnd metallurgical practice, one in every State or territory where mining is carried on; but there is not room for twenty first-class, complete, Schools of Mines. like those of Paris or Freiberg. Indeed, if the thing be left to private zeal, there never will be one such institution among us. The country needs one, and no more, to stand in the midst of all local schools, to concentrate and utilize the efforts of all. Such a central (we will not say national) school, would by no means exert a disastrous effect upon the other schools throughout the country. It would simply take the place of the foreign academies to which our young men are now obliged to go, after they have learned what can be taught them here; and as soon as it thus became possible to complete a thorough course without the expense of a foreign residence, our mining schools, great and small, would have twenty students where they now have one.

We believe that the only way to secure such a strong, complete, central school, is to make it a national one. Congress has already attempted to aid State schools for agriculture and mechanics, by large grants of land. What has been the result? Those States which need such assistance least are the only ones who are making intelligent use of it.

The *Scientific American*, with brilliant logic, says:

"That such a school, properly managed, is to be desired by every consideration of national advantage cannot be denied; but we cannot see the necessity of its being established or supported by the national government, any further than an appropriation of money or lands could be considered as an aid."

That is to say, there is no objection to the giving of money or lands by the national government, but great objection to any plan securing the proper application of that endowment. We present two more gems which we find in close neighborhood in the same lucid argument, and the beauty of which is heightened by decided contrast:

"Neither do we see the necessity of locating such an institution as that proposed in a mining region. Assays of ores and their chemical treatment can as well be made and accomplished in New York city or anywhere else, as in Colorado, California, Montana, or Arizona, and certainly the location should be chosen with a view to the benefit of the greatest number. * * * An endowment by government may be very well, but the institution should be managed by the associated effort of those directly interested."

A writer who thinks the object of a national school of mines is merely "to make and accomplish assays of ores and their chemical treatment," and who can, in the same breath, declare that such a school should be managed by those directly interested, and yet that it need not be in a mining region, is perhaps beyond the pale of argument. We shall consider, hereafter, the point of location, and show that "New York city, or any where else" is not the best place for such an institution. For the present, we close with the presentation of one feature of great importance in Senator STEWART'S plan.

The education offered by the national school will be *free*. This is not done as a favor to the people. On the contrary, they will do the country a favor by embracing this offer. As we have shown, over and over, the ignorant miner may continue for years, robbing one district after another of its wealth, but enriching himself. It is the country which suffers. It is we who cannot wait. We must either stop mining by force, or stop the waste of mining by knowledge. Will struggling private schools, which can only be cheap if they are bad, supply this want? No, not for years. Will State schools do it? Perhaps; but something is needed to stimulate both these classes into vigorous activity. If the mining States would only unite, each electing one delegate to the board of administration, to establish a grand central free school, the expenses of which should be paid from a special tax laid on productive mines, and the government of which should be in the hands of the delegates aforesaid, with appeal to some impartial and intelligent official,—say, the Secretary of the Treasury at Washington,—the whole problem would be solved. Of course, there would be no harm in getting the assent of the general government to the arrangement, especially as it ought to include several of the Territories. Probably, even the *Scientific American* would not object to such a plan. We beg pardon: on second thought, we perceive that *this is the very plan embodied in* STEWART'S *bill*, to which the *Scientific American* objects!

It is true, that the spread of knowledge concerning the sciences of mining and metallurgy in this country would doubtless decrease the number of absurd and useless patents annually applied for, to the great gain of patent agencies, and of no one besides. It is also true, that such an advance in general intelligence would make it necessary for "scientific" papers to contain, now and then, a little real science. But of course the opposition of the *Scientific American* cannot be connected with these facts.

COLORADO ORES—THE UTILIZATION OF SULPHUR.

Hitherto we have spoken of the metallurgical treatment of the ores of Colorado, with reference to the utilization of their contents in gold, silver and copper only. In a comprehensive discussion of the subject, however, we cannot pass by the fact, that the sulphur itself, which has been the *bete noir* of our miners, may become an additional source of profit. We have already shown how this element may be used, in suitable roasting furnaces, as a fuel, by the combustion of which the ore is prepared for further treatment. It remains to be shown how the product of that combustion, sulphurous acid gas, may be profitably utilized.

We do not intend at present to describe the manufacture of sulphuric acid from pyrites. That process is sufficiently well known to metallurgists, and is already practiced on a small scale in the United States, although almost all our sulphuric acid is still produced from imported sulphur. The use of pyrites for this purpose makes but slow headway, for several reasons, among which we will only mention the fact that most of the pyrites of the Atlantic coast, available for the manufacture, contains no other valuable element than the sulphur; and the saving by its use is, in many cases, not great enough to counterbalance the chemical difficulties (in themselves trifling) which it involves, and the prejudice of manufacturers against an innovation. In England, where this process is but a part of an immense, systematic chemical industry, and intimately connected with the soda-ash, bleaching-powder and other kindred trades, and with the metallurgy of copper and other metals, the case is widely different; since the original cost of mining, transporting and preparing the ore is divided among many branches of manufacture, instead of being borne by one.

A paper read by Mr. PETER SPENCE before the British Association, gives the details of experiments with the SPENCE reverberatory, used in vitriol works, and recently employed in the smelting of copper. According to these results, it appears that 84.8 per cent. of the sulphur in the crude ore are economized as sulphuric acid, and 15.4 per cent. are finally lost. Of 33 per cent. of sulphur, contained in the ore, as averaged for smelting, 28 per cent. are therefore saved and rendered commercially valuable. As we have had occasion to say, we believe the terrace furnace will do as well as any reverberatory in this respect, if not better.

This manufacture will, sooner or later, become the starting-point and basis of a great American industry. No one doubts that; but the question may be with propriety asked, whether the time has come for its successful establishment. In the present article, we shall confine ourselves to the relations of the subject to the metallurgy of Colorado.

The manufacture of sulphuric acid as an incidental product from the copper pyrites of Colorado is open to two objections: first, the cost of the necessary apparatus—mainly the lead-chambers; and, second, the lack of a market for the acid. It would certainly be the height of folly to incur additional expense for the sake of producing an article which nobody wants. If both these objections are well-founded, therefore, there is no more to be said, as long as present conditions continue.

The cost of lead-chambers is, indeed, an inevitable item. Nothing better or cheaper has yet been brought into successful use. But the worthlessness of the acid is not so certain. It is true, there is no market for it. It cannot be transported to any Eastern market; and there are apparently no consumers for it on the spot.

Our suggestion is, that the crude "chamber acid," without concentration or refining, may be used with advantage in the processes of gold extraction. We refer to the treatment proposed by STETEFELDT, in the *Berg und huettenmaennische Zeitung*, of Nov. 11, 1864, an abstract of which we translate, as follows:

1. Partial desulphurization of the pyrites, the sulphurous gases being converted into crude "chamber acid."
2. Matt-smelting of the calcined ore, as it is now practised.
3. Dead roasting of the matt or regulus.
4. Extraction of the oxide of copper from the roasted regulus, *in the humid way*, by means of hot chamber acid, and subsequently, production of copper vitriol or cementation copper.
5. Smelting of the auriferous residuum with roasted lead ores, and final extraction of the gold by cupellation.

The first part of this process, which Mr. STETEFELDT proposed at so early a day, is already adopted. Matt-smelting is in operation in Colorado; and it remains to be seen whether the metallurgists of that territory will undertake for themselves the further treatment of their regulus, or ship it to Eastern works.

We do not say positively, that their best course, under present conditions, would be to carry out the process we have indicated. It is a question to be settled by "figuring;" and every smelter must perform the calculation for his particular case. We cannot, and, if we could, we would not, relieve him of so important a duty.

WILSON'S PATENT STEAM STAMP MILL.

This mill, which our readers will find illustrated and described on our first page this week, belongs to class of direct-acting steam stamps, in which the stem of the stamp is at the same time the piston-rod of a steam engine. There are several inventions of this kind before the public; but none of them have as yet been thoroughly tested in long practice, so that we may know exactly under what conditions (if at all) they are to be preferred to the old-fashioned stamp battery. We do not propose at present to discuss the general question of steam stamps; but we notice one or two features in the Wilson mill which are worthy of notice and praise, and which have been too often neglected by the inventors of similar contrivances. The first is the fact that the stamps do not strike in any way upon the frame of the machine, but upon a separate battery bed. This is an extremely important thing. The common California stamp mill has the same feature; but some of our discoverers of new apparatus have appeared to think it superfluous.

The second good point about this mill is the extreme simplicity of the valve-action, and the consequent regular and certain distribution of steam. Whether the apparatus as a whole be successful or not, two chances of failure are certainly stopped by the two excellent peculiarities of structure which we have pointed out.

LAKE SUPERIOR.

The cry of "Hard Times" echoes from many mining districts, but none are more dismally situated than the copper region of Lake Superior. In our Mining Summary will be found the returns for 1867 of the producing mines; but these figures do not tell the whole story. More pathetic is the report given by the Superintendent of one of the Ontonagon mines, the *Ogima*, which raised during the year fifty-four and a half tons of copper, at a cost of thirty-five thousand dollars, the market value of the same being about eighteen

thousand dollars. This sort of business can scarcely pay, with any amount of protection.

What is the reason that people are so disappointed in the Lake Superior mines? We think it is because they have entertained extravagant notions of the richness of the ore. Not merely the masses formerly found in the *Cliff* and *Minesota*, but also the delusive circumstance, so often glowingly set forth in prospectus and report, that these mines contain "none of your complex ores, but pure, native copper," naturally tended to feed high expectations in the minds of those who did not reflect that the average contents of copper in this wonderful rock did not exceed two per cent., and that the Lake Superior ore therefore ranks among the poorest in the world.

This lesson has been learned through bitter experience; and there is no longer sanguine speculation, but sullen, dogged hard work in the mines of Lake Superior. We notice that nitro-glycerine is being tried in some of them, and that a great reduction of mining cost, by its use, is reported. Without some change of present economical conditions, it is evident that many of the companies at the Lake, though they may be "on the road to dividends," have their faces the wrong way.

NEW PUBLICATIONS.

THE QUADRATURE OF THE CIRCLE.—Dr. VAN DER WEYDE, well known to our readers, commenced some time ago the publication (through the APPLETONS) of a work called the *Philosopher's Stone*, comprising four essays, containing the answers of positive science to the ancient queries concerning the quadrature of the circle, perpetual motion, the making of gold, and the elixir of life. The first instalment of the work concerns a topic alluded to by us not long ago, (Vol. IV. p. 876,) being a pamphlet on the quadrature of the circle, which contains, in a condensed form, all that mathematicians of ancient and modern times have discovered on this subject. First, the method of ARCHIMEDES is given: he calculated, 2,000 years ago, the periphery of the circumscribed and inscribed polygons of 96 sides, and found, for the diameter = 1, the circumference to be between 3 10-70 and 3 10-71; but, accepting the former number, (which is not as near to the truth as the second,) he deduced the proportion 7:22, which makes the circumference too large, by more than one-tenth of the diameter. METIUS, who extended his circulation to polygons of 1587 sides, found for the diameter = 1, the circumference 3.1415929, and deduced from this the beautiful proportion 113:355, which is only a quarter of a millionth too large. ROMANUS extended the calculations to 17 decimal figures, and LUDOLPH VAN CEULEN to 35, which number is called by mathematicians the Ludolphian number, and is so near the truth, that, if we make a circle of which the radius is equal to the distance of the nearest fixed star, we may calculate its circumference correctly to within a space much less than the thickness of a hair. Our imagination is at a loss to conceive the smallness of such a fraction. Later, LAGNY calculated this number to 131 decimals; in the library of Ratcliffe, in Oxford, it is found at 155 decimals; and Mr. Shanks, of Durham, England, published in 1853, a book containing the value of π to 607 decimals: but as 10 decimals are sufficient for the most accurate calculations, these numbers are mere mathematical curiosities.

The author gives next the different remarkable infinite series representing correctly the circumference, as found by EULER, LEIBNITZ, WALLIS, BROUNKER, MONTFERRIER, PIOCHE and others. One of these series, that of EULER, is rather remarkable; for the diameter = 1, the fourth part of the circumference is equal to

1—1-3+1-5—1-7+1-9—1-11+1-13—1-15+1-17—etc.,

or two-thirds of the circumference is equal to

1-1+1-2+1-3+1-4+1-5+1-6+1-7+1-8+1-9+1-10+1-11+etc.

Finally, the author gives a simple and original manner by which the problem of the quadrature may be perfectly solved, by means of the differential and integral calculus, and also a geometrical construction which gives a straight line, equal in length to the circumference of the circle, approximately correct to within a two-millionth part of the diameter.

After demonstrating that an absolutely correct geometric construction, solving this problem, is impossible, and that the proportion between diameter and circumference cannot be expressed by any numbers, either whole, fractional or irrational, but only by an infinite series, the author comes to the following conclusions: First, that persons who do not know that the problem was solved long ago are behind the age; second, that those who think it insoluble do not understand anything about modern mathematics; and third, that those who occupy themselves with the research after a ratio of whole numbers, or fancy they have found it, deserve our pity.

This pamphlet appears to be intended for the benefit of the last named persons; but it can only be fully appreciated by thorough mathematicians.

Scientific Meetings.

PLYMOUTH LECTURES, BROOKLYN.

The third lecture in the scientific course of the Plymouth Young People's Association of Brooklyn was delivered on Wednesday evening, the 8th inst., by R. W. RAYMOND, Esq., Editor of the AMERICAN JOURNAL OF MINING. Subject—The Steam Engine.

The lecturer gave a brief account of the properties of steam, showing how the vapors differed from gases in their relations to heat and pressure, and finally defining the distinction as one of degree rather than kind. Every gas is a vapor, far short of the point of saturation, or in other words a super-heated vapor, while super-heated vapor, especially when free from the point of saturation, is subject to the laws which govern gases. The pressure of steam at different temperatures was given from one-tenth of an atmosphere at the freezing point to one atmosphere at the boiling point, eight atmospheres at 324° Fahrenheit, and thirty atmospheres at the melting point of tin. Mr. RAYMOND then discussed the steam-boiler, in its essential construction and principle, and passed to a historical sketch of the steam-engine, from the fanciful toy invented by HERO of Alexandria, a century before CHRIST, to the pompous quackery of the Marquis of WORCESTER, the incomplete and wasteful, but ingenious devices of SAVERY and NEWCOMER, and the suberb, perfect creations of WATT and FREVETHICK. The lecture was illustrated with experiments, charts, drawings on the blackboard, and the exhibition of several sectional and working models of steam-engines. We understand that Mr. R. has made engagements to repeat it in several places. The next lecture in this deservedly popular course will be delivered by Prof. PLYMPTON of the Polytechnic Institute, Brooklyn, on January 22d. Subject—Light and Color.

POLYTECHNIC BRANCH OF THE AMERICAN INSTITUTE.

TUNGSTEN STEEL AND WOLFRAM ORE—TOWER CLOCKS OF NEW YORK—BEAUTIFUL EXPERIMENTS, BUT NOT VERY NEW.

The regular weekly meeting of the Polytechnic branch of the American Institute was held last Thursday evening, Prof. Tillman in the chair. Notwithstanding the extremely cold weather, the hall was well filled by the members and interested strangers.

Dr. Feutchwanger exhibited a specimen of tungsten steel, manufactured in Austria from cast iron and Wolfram ore. It is very close-grained, hard, and suitable for cutting instruments, rockdrills, &c. It cuts glass as readily as the diamond, and is an excellent material for rails. Dr. Feutchwanger showed also a specimen of Wolfram ore, generally called tungstate of iron, which is used in the production of Wolfram steel; and enumerated the different tungsten compounds.

The regular subject of the evening being called, Mr. D. W. Bradley read his paper on the tower clocks of New York city, which was written in a very pleasant vein, and described his visit to the clocks of the principal churches. Some were found to be in a wretched condition, which would amply account for their irregularity.

Dr. Preterre exhibited a chromic acid battery, which he used in connection with a cheap form of telegraphic dial, an electro-plating battery, and a simply constructed electric machine. He experimented with some glass tubes of various construction and containing different gases, which, being placed in connection with the electric machine, showed the passage of electricity through them by differently colored and very beautiful streaks of light, the brilliancy of the effect of which was much enhanced by their rapid revolution on the cylinder to which they were attached. The tubes were of such a small size as to be rather toys than any thing else, but the exhibitor thought they were great novelties, in which idea he was much mistaken; for we well recollect seeing the same thing on a much larger scale more than three years ago, and in this country.

Correspondence.

[To insure insertion of correspondence in our columns, the full name and address of the writer must be given.]

Steam Power in Mining.

EDITOR AMERICAN JOURNAL OF MINING:

JERSEY CITY, N. J., Jan 5, 1868.

I saw by your interesting journal of Dec. 28, 1867, that some attemps at hydraulic mining have been made by throwing the water by the power of steam, which is an idea that I promulgated in a circular some three years since, wherein I proposed a better machine for the purpose than any other yet produced.

It is well known that where the circumstances were favorable, miners have had great success with the hydraulic works used for washing down bluffs and obtaining the gold; but the circumstances must be favorable, or the water power will be obtained at an enormous expense. It happens, however, that favorable circumstances are exceptions, and that the bluffs not to be reached by the hydraulic processes heretofore in practice are the more general rule. If a particular bluff does not pay, the ditch leading thereto is not moveable property; but a steam engine may be made to move itself to a better site, and the same, and only, device which makes a self-propelling engine practicable, is needed to work the pump, so as to throw a small quantity of water with great force while undermining the bluff, or changing to a great quantity of water at less force or less lift, for the purpose of sluicing, as the quantity of water actually delivered through a nozzle is a small matter, compared to the quantity that the same engine can deliver, if the water is not forced through a nozzle or other tight place. A steam pump, or a common steam fire engine, are the best machines for the purpose that are now in use. Either machine is efficient for the purpose of undermining, but when there is a great amount of pay dirt caved down, the small quantity of water is nearly useless for the purpose of sluicing, and the capacity of the pump is not as it should be, equal to the capacity of the steam power for raising a greater quantity of water to a less height. It is not unusual to have a pressure of 180 lbs. per square inch in the pump of a fire engine, which is equal to the pressure due to 400 feet head. In this case it is plain that the engine is then actually doing work equal to pumping that quantity of water 400 feet high, which is jnst equal to the pumping of twenty times that quantity of water 20 feet high, or forty times the water 10 feet high; that is, if the water ways are large enough, and the water is not forced through a nozzle or other cramped place, the same engine will deliver such qnantities at such elevations for the purpose of sluicing. Now there is no steam pump or fire engine that can raise the greater quantity of water to correspond to the lesser elevation; yet that is the machine which is very much needed, and is the one I proposed to make.

The pump should be of sufficient capacity to give the engine full work while pumping to an elevation of 15 or 20 feet, and then change from great quantity of water to any required force, by reducing the length of stroke of the pump piston more or less, to suit circumstances; but the length of stroke of the steam piston must not be reduced under any circumstances. There are some steam pumps now in use that have a variable length stroke which is of no practical utility, because the steam piston is also varied in length of stroke. If the length of stroke of the pump piston is reduced, say to one-tenth, it has no increased force; yet the laws of nature allow of an increased force of ten to one, where the distance is reduced to one-tenth. The pump piston will work properly at any extreme short stroke. A slight movement displaces a corresponding amount of water, because the water is not elastic. But a one-tenth length of stroke of the steam piston wastes nine-tenths of the steam, as one-tenth of the steam would have driven the piston just as far, and with the same force, if the steam cylinder had been shortened as much as the stroke.

The patent on the device that allows of an adjustment to any force desired, or any desired quantity with less force, is owned by the Dickson Street Car, Road, and Steam Engine Company, John B. Root, President, New York.

PERRY DICKSON.

Extracts from State Papers.

We make the following extracts from the very interesting report of Hon. D. A. Wells, special Commissioner of the Revenue, as most important to our readers and deserving of their attentive consideration:

INCREASE IN THE INVENTION OF MACHINERY.

In recounting the results of the industrial condition of the country, the Commissioner refers to the continued increase in the invention of machinery, and the perfecting of processes for improving and cheapening products. "The whole number of patents issued for the eleven months ending Dec. 3, 1867, being 10,907, as compared with 9,100 issued during the corresponding period of 1860, 6,220 for the entire year 1865, and 7,637 for the year 1864. This very remarkable increase must not, however, be accepted in its fullest apparent extent, as illustrative of substantial progress. It is so, undoubtedly, in great part; but on the other hand, the real value of many patented improvements, as additions to the substantial wealth of the country, may well be doubted."

PROGRESSIVE IRON INDUSTRY.

"The number of blast-furnaces for the manufacture of pig iron, in operation during the past year, has been in excess of that of any former period, while an unusually large number of new furnaces are now in process of construction. During the same period the rolling-mills of the country were generally in continuous operation; new establishments of this character and new and extensive works for the manufacture of Bissemer steel have also been erected; while a marked increase in the American product of ordinary steel is reported. The Commissioner would also, in this connection, call attention to the fact that, notwithstanding the almost continued reported depression of the iron interest in the United States, the average annual increase in the domestic product of pig iron is remarkably uniform, and greatly in excess of the ratio of the increase of population; the annual ratio of increase of pig iron, from 1850 to 1866, having been in excess of eight per centum, while that of population from 1850 to 1860, was about 3½ per cent.; or, stated differently, the increase in the production of pig iron, from 1810 to 1866, was 2,371 per cent., while that of population was 410 per cent. The annual ratio of increase in the product of pig iron in the United States since 1865 has also been greater than in Great Britain."

PRODUCTION OF ANTHRACITE COAL.

The increase in the production of anthracite coal (which may be taken as a measure of the production of all American coal) during the year 1866, was about three millions of tons over the product of 1865, on a gross return for the former year of 12,399,747. This extraordinary increase was referred at the time in part to a speculative revival of trade and industry succeeding the termination of the war; and also to the stimulus of very high prices. These stimulants, however, if they were really influential, have clearly not operated in any degree during the past year, and yet the gross product of anthracite coal sent to market has not materially diminished; the deficiency up to the 30th of November, 1867, in the aggregate of coal sent eastward from Pennsylvania, having been only 170,041 tons, as compared with the movement of the corresponding period of 1866; while the stock on hand at the various markets available for consumption, at the close of the season of 1867, was estimated at less by 250,000 tons than the stock on hand at the close of the two preceding years. It seems, therefore, certain that the conditions of ability to consume—which conditions are mainly industrial—have not become impaired during the past year; or, in other words, the industry of the country has developed during the past year to such an extent as to render what in 1866 seemed abnormal and uncertain now legitimate and permanent.

EXPORT OF PETROLEUM.

The record of the export trade in petroleum for the last three years has also been very similar to that of coal. Thus, for the years 1864 and 1865, the annual export of petroleum, with the advantage of a high premium on gold, averaged about thirty millions of gallons; but during the year 1866 the exports suddenly rose to an aggregate of over sixty-five millions; and this extraordinary increase, which originally might have seemed speculative and temporary, has during the past year been substantially maintained.

Calcium.

Calcium is the metallic base of lime, and was obtained by Sir Humphrey Davy from that material by means of galvanic agency. During the process, the product was received in a vessel filled with naptha, in which it was excluded from oxygen, and consequently it retained its metallic appearance, which resembles that of silver. If atmospheric air be admitted to it, it absorbs oxygen rapidly, burns with an intense white light, and reproduces lime, which is an oxyd of calcium. The name of the metal is derived from *calx*, the Latin word for lime. As obtained by the fusion of sodium with iodide of calcium, it is a light yellow metal, which is very malleable, and slowly decomposes water at ordinary temperatures. It enters into combination with oxygen, chlorine, bromine, iodine, and sulphur, when heated with them. Calcium appears to enter into the composition of nearly all pig irons, but not directly, and, although found in cast iron, has not been found in wrought iron. It behaves in regard to iron, very much like the alkaline metals, and, like them does not possess sufficient fixity to enter largely into combination with iron, and is thought to injure the quality of that metal to some extent. A sample of cold blast iron with a high yield of limestone flux gave 0.95 per cent. of calcium, while a hot blast white iron afforded only 0.20 per cent., being the smallest quantity observed. Although the presence of the calcium demonstrates the existence of a slight affinity between that metal and iron, the great bulk of calcium passes into the slag as lime.

The chloride of calcium, or chloride of lime, as it is more fa-

milliarly called, is a most important compound in the arts from its property of bleaching tissues; in the bleaching of linen, and in paper making, the saving of time caused by the use of this substance, is incalculable.

Manufacturing and Mechanical Notes.

No. 1.

South Brooklyn Steam Engine and Boiler Works

D. M'LEOD PROPRIETOR.

In a ramble through the southern part of the "City of Churches," our eyes descried in the distance some large and grim-looking objects, which excited curiosity. On approaching them we discovered they were a set of the well-known Martin Marine Boilers, ready for transportation or shipment. Surely, thought we, there must be some extensive machine and boiler works in this vicinity, and we were not mistaken, for, in a few moments, the sharp tapping of workmen's hammers, which had been silent during the noontide rest, came within hearing, and we soon discovered ourselves to be on the premises known as the South Brooklyn Steam Engine and Boiler Works. Through the courtesy of Mr. D. B. Cobb, the able superintendent, we were permitted to go through the workshops, and examine all that was going on. The drafting office, under the supervision of J. V. V. Booraen, was the first room we entered, where we found ourselves quite at home. At a single glance, it was at once apparent that the drawings were not only made in a superior manner, but that they were arranged, as the numerous drawers indicated, very systematically. We noticed several drawings of stationary and marine steam engines, finely shaded with the brush in India ink, and displaying superior skill in mechanical delineation. There is nothing more beautiful to the eye of a mechanical man, than elaborately shaded drawings of machinery. Few but the frequenters of a drafting office, know the labor required to finish up artistically a well-shaded picture. Taste, a steady hand, a correct eye, good judgment in colors, and a thorough knowledge of light and shade, in addition to a practical acquaintance with mechanism, are all required from the expert mechanical draftsman. Since photography has come into such general favor, the shading in India ink has been in a great measure dispensed with, on account of the great expenditure in time and labor required to make a truly artistic picture. Working drawings, in the office alluded to, were neatly figured, and the dimensions, therefore, could easily be ascertained by the workmen, without the latter measuring with their scale and rules, which the draftsman well knows are not always of the most correct or cleanly description. The manner in which the drawings were mounted for usage in the workshops, we think, might be improved. The best plan for making working drawings is to draw them on one size of paper, say, "double elephant," 40 x 26 inches, and to one scale. When the paper drawing is completed, and considered correct, a tracing can be readily made, not on vellum, but on paper, which paper tracing should be an exact fac simile of the original drawing. By washing a smooth board over with shellac varnish, and giving the back of the tracing also a light coat with the same material, the duplicate drawing or tracing can be mounted on the board, and when dry will have the appearance of having been drawn on the board. A coat of varnish may be applied, when the mounted tracing is dry. Such a method as this has advantages. It allows the original drawing to be always kept clean, and filed away in the drawing office for reference, whereas the duplicate being mounted, cannot be torn, and if soiled, can always be sponged off with soap and water. This plan is adopted with success at the arsenals and navy yards, at the Pennsylvania Iron Works, and at many large establishments in Boston, New York, and Philadelphia.

Upon one of the boards we observed a drawing of a large stationary beam condensing engine, intended for the Passaic Zinc Works. The design and proportions of this engine are among the best we ever saw. The beam, centre columns, cylinder and plummer blocks, together with all other details, are in course of construction in the machine shops. The cylinder casting is as smooth as any kitchen stove, being without a single flaw or "blow-hole." We subjoin some of the dimensions of this engine:—Diameter of cylinder, 28 inches; stroke, 60 inches; diameter of driving band pulley, 24 feet, with a face of 48 inches; diameter of main shaft, 12 inches, by 6 feet 8 inches long; journals of main shaft, 12 inches in diameter, by 18 inches long; beam centre journal, 7 inches in diameter, by 10 inches long. With a pressure of sixty pounds of steam it is expected this engine will make forty-five revolutions and will develop nearly 500 horse-power. The bed-plate, condenser and channel way are all in one casting, and the cylinder is jacketed for live steam. The engine will be fitted with the Babcock & Wilcox cut-off, and is expected to show some of the best work ever turned out from this establishment.

We noticed in one of the erecting shops a pair of back-acting marine engines, with 60 inch cylinders by 36 inch stroke, as designed by Chief Engineer Isherwood for a certain class of government steamers. Three pair of engines of these dimensions are now being built there for government vessels of the Java class. Among other work in course of progress we observed some horizontal engines with the Babcock and Wilcox cut-off, and a brick-making machine. Some of the machine tools in the workshops are very strong—having been made on the premises, with especial reference to large and heavy work. For instance, there is a lathe which will swing six feet, with a bed 48 feet long; planers which plane 5 feet 6 inches square, and another which will plane 9 feet by 10 feet, with a cross slide 14 feet in length. A lathe is in course of construction which will turn off the face of band pullies 24 feet in diameter. The blacksmith shop is square in form, and holds fires for eighteen blacksmiths. In the centre of the shop is a Dudgeon's steam hammer with a 20-inch cylinder. The foundry is large and airy. Twelve castings, averaging 45,000 pounds each in weight, have lately been poured. Every convenience and facility for moulding, pouring and hoisting heavy castings are placed at the disposal of the workmen. It was at these works that the machinery for the U. S. gunboats Nyack and Shawmut, and the double-enders Metacomet and Mendota was built. A very fine vertical engine, with a cylinder 46 inches in diameter by 40-inch stroke, having the Babcock and Wilcox's cut-off, has just been completed and is running successfully at the mills of Cooper & Hewitt, Trenton, N. J. Manufacturers seem to know now very generally that the essential points of excellence in the steam engine are a good boiler, which generates the greatest quantity of steam for the least consumption of fuel; and, secondly, a reliable cut-off, which uses the steam to the best advantage, by admitting the proper quantity for the work required.

The Brooklyn works are now busy with several large orders and give employment to numerous workmen. The various departments are well arranged—air, light and space having been duly considered in laying out the workshops.

H. G. LUDLOW'S PATENT STOP-VALVE.

What would Engineers do without valves? They are the arteries of water and steam machinery and their name is legion. Their appellations are sometimes fanciful, occasionally significant, and often expressive of their particular motion, or *modus operandi*. We have, for instance, in common engineering parlance slide-valves, rotary-valves throttle-valves, check-valves, injection and ejection-valves, globe-valves, butterfly-valves, clack-valves, conical-valves, spherical-valves, safety-valves, stop-valves, &c., almost *ad infinitum*.

It is one of the latter we give in the annexed illustration. The parts consist of a cylindrical casing, or valve-box, through which gas, water or steam may flow from right to left, or *vice versa*. The rear of this valve-box is formed with two wedge-shaped projections. Between these projections, and the valve, which is easily distinguishable being partially open, is a wedge pressing against a ridge on the back of the valve. This wedge terminated at its upper end in a ring or jaws, for holding the lower end of the valve stem. The valve-stem, raises and lowers the wedge and through this only acts upon the valve. Upon the back of the valve is formed a lug which enters an elongated recess in the wedge, and by this arrangement the wedge is permitted to move upward a certain distance, thus loosening the valve before it begins to rise. Whatever the position of the apparatus, the wedge cannot pinch the gate before the valve opening is covered.

Fig. 4

Several advantages are claimed for the valve over others in use. First, over the globe valve; this gives a direct full size opening in line with pipe on which it may be placed, thus allowing a more unobstructed and rapid flow. Secondly, while in the sliding valve, with parallel seats, there is no remedy for the looseness of the gate, arising from wear of surfaces, in mine this is obviated by the further descent of the wedge. Thirdly, while in the sliding valve with wedging seats, the gate may stick fast when screwed down with much force, in mine the pitch of the wedge and inclined planes is so rapid, and the wedging surfaces so small, that this is prevented. Fourthly, this is much more easily and cheaply repaired than other sliding valves. The gate and seat may be removed, leaving the iron box in position, or the valve surfaces reground without removing the seats. Fifthly, it can be made at less cost than other sliding valves. These valves are made to open and close, either with a screw stem, or more quickly with a simple sliding rod. In sizes above two inches, the screw stem revolves on its axis instead of rising and falling with the gate, thus dispensing with a long neck, as shown in the accompanying illustration.

Dr. T. Sterry Hunt's Views about the Madoc Gold Region.

From the Daily Intelligencer of December 9th.

SIR: As you and most of your readers are aware, a report has been extensively circulated in this locality, and has even found its way into the columns of the press, that Dr. T. Sterry Hunt, on his late visit to the mining district of North Hastings, gave it as his opinion "that there was not enough gold outside the Richardson mine to buy a dinner," and expressed himself otherwise in very disparaging terms concerning the prospects of our mines.

This report I received with great surprise, as in the course of a long and most interesting conversation which I had with Dr Hunt immediately on his return from Madoc, he expressed himself in very different terms from those attributed to him, speaking to the full as hopefully of our future prospects as I could have expected. I regretted the prevalence of this report the more, that such an opinion coming from a gentleman so well known for his scientific attainments, and holding so prominent an official position in the Geological Department of the Dominion, was calculated to injure, materially, the standing of our mines in the estimation of capitalists in other parts of the Dominion and abroad. I therefore lost no time in writing to Dr. Hunt, requesting him to give a public contradiction to this absurd report, of the falsity of which I was thoroughly persuaded.

My letter was mailed on November 11th; but owing to Dr. Hunt's absence in the Maritime Provinces, has unfortunately remained unanswered until the 12th of the present month, and the reply was only received by me on Saturday evening last. I have much pleasure in handing it to you for publication, as, though expressed with the caution proper to be observed by a gentleman in Dr. Hunt's position, in speaking of an as yet only partially developed, and apparently exceptional deposit of gold-bearing rocks, it yet perfectly agrees with my impression of Dr. Hunt's opinion, gathered from my previous conversation with him.

Yours very truly,

JAMES T. BELL.

Church Street East,
Belleville, Dec. 16th, 1867.

DR. HUNTER'S LETTTER.

MONTREAL, Dec. 12, 1867.

MY DEAR SIR: I have just returned from an absence of a month in Nova Scotia, and find your letter of November 11th awaiting me. In regard to the opinions as to the gold of Madoc, expressed by me during my late visit there and since, I beg leave to assure you that the statement attributed to me that "there was not gold enough outside the Richardson mine to get a dinner, etc.," is an absurd falsehood. My own views, as then expressed, are very well given in an editorial in the Madoc *Mercury* of November 9, by some person unknown to me, viz.: That many of the miners are wasting time, money, and labor, in digging in localities where the presence of gold is not indicated by veins or any sign whatever. I, however, spoke as encouragingly as I possibly could of those places where gold had been actually found, and await with interest the results of trials on a large scale, which shall decide whether it is present in all these localities in paying quantities. At the same time I recommended, and still recommend people to be cautious, and not to be led by unfounded statements, to spend their money, as too many seem to have done, in sinking pits into beds of rock where there is as yet no evidence of the precious metals, and no appearance of veins or leads of any kind.

Yours faithfully,

T. STERRY HUNT.

JAMES T. BELL, ESQ.

Mechanical Properties of Steel.

William Fairbairn, F. R. S., communicated to the British Association the results of a laborious series of experiments to determine the comparative merits of different kinds of steel as regards their powers of resistance to transverse, tensile, and compressive strain. In order to arrive at correct results he applied to nine of the first manufacturing firms, including Bessemer & Co., for the 52 specimens experimented upon. The experiments commenced with the transverse strains, which were conducted, as on former occasions, by suspending dead weights from the middle of the bar which was supported at its extremities, the supports being four feet six inches apart. Immediately over the centre of the bar, at a point equidistant from the supports, a wheel and screw was attached to a scale on which the weights were placed, 56lb. at a time. After each weight was laid on, the deflection was taken, and the experiment was continued until a permanent set was obtained. The permanent set was observed at intervals in the following manner: After the deflection produced by the load had been ascertained, the screw was turned so as to raise the scale and relieve the bar of the load, thus enabling the experimenter to ascertain the effects of the load upon the bar and register the permanent set. The results of the experiments on transverse strains show that within the elastic limits the deflections are in proportion to the pressures. The bars generally exhibited very high powers of resistance to transverse strain, the mean value of the unit working strength being six tons. It was next shown that taking 11 tons per square inch as the mean value of the compressive and tensile resistance of wrought-iron at the elastic limit, the value of the unit of working strength is less than two tons, and thence it followed that the transverse strength of these steel bars will be about three and a half times the strength of wrought iron bars of the same dimensions. He determined the relative value of these two materials, taking the cost of iron at $35 per ton and steel at $60, and found that iron would be about one and a third that of steel. In the case of railway bars, and such constructions, beside this saving in the cost of material, it must be borne in mind that the steel rail would last four times as long as the iron rail. Taking the mean results of the experiments on thirty of the best specimens with regard to tensile strain, he found the mean tenacity per square inch equal to 47.7 tons. Taking 25 tons per square inch as the tenacity of the best English hammered iron, it follows that the tenacity of steel bars is nearly twice that of iron bars. The results with regard to compression show that thirty-two of the bars supported pressure of 100.7 tons per square inch, while twenty three bars were more or less fractured by this pressure. The mean value of the unit of strength in short columns is 23.4. It was calculated that the work expended in rupturing the material by compression is about five and half times that expended in rupturing similar material by extension. The resistance to compression was found to be more than double that to extension: hence it follows that the most economic form of a steel bar undergoing transverse strain would be a bar with double flanges, having the area of the bottom flange about double that of the top flange.

New Railroad Car.

A novel style of rail car, carrying its own track, and designed for use on common roads or the street of a city, was shown at Philadelphia very recently. In this vehicle the car moves the wheels instead of the wheels moving the car, and the wheels do not touch the ground at all. There are six pairs of wheels, and each pair has a broad, flat foot attached. These "feet" rest upon the ground and bear up the wheels, while the two rails under the body of the car are made to roll along the upper surface of the tire as if it were passing over so many pulleys or friction rollers. The feet and wheels are all connected by an endless chain, and as fast as the body of the car passes beyond one of these feet it is lifted from the ground and made to travel along to the front of the car, where it drops on the road again and the whole is thus kept in continual motion. The wheel truck in fact walks along the road, while the car itself rolls along after the wheels.

Steel Rails.

Steel rails are growing in popularity on our American railways. Several roads now have them on their lines, and it is now stated that the Boston and Providence railway is laying them on several parts of its line, and has adopted the principle of laying

steel rails as fast as the iron ones were out and have to be replaced. In one place, at Roxbury, where steel rails have been in use upwards of a year, one hundred and twenty trains or locomotives, pass over them daily, and as yet there is no perceptible wearing away. Iron rails had to be relaid seventeen times a year at the same place.

Patent Claims.

Interesting to Miners, Millmen, Metallurgists, Oil-Men, and Others.

72,465.—MACHINE FOR BORING ROCKS.—Frederick Bernard Dœring, London, England.

I claim, 1. Constructing engines or machinery for boring or working in rock or other mineral, in which the pistons of the small cylinders are operated by motive-fluid, distributed by the main cylinder, without having been previously utilized in the main cylinder, as herein described.

2. Constructing engines or machinery for boring or working in rocks or other mineral, in which the main cylinder itself distributes the motive-fluid at distinct portions of the stroke to other cylinders, as in the arrangement herein described.

3. Constructing engines or machinery for boring or working in rock or other mineral, in which the piston of the main cylinder, with the tool, has the required rotary motion imparted to it by a twisted bar, or equivalent, in combination with other parts, as herein described.

72,466.—STAND FOR ROCK-DRILLING ENGINE.—Frederick Bernard Dœring, London, England.

I claim, 1. The combination of parts, substantially as herein described and shown, in such manner that the bearing-pieces for wedges or other fixing-arrangements may have more than one point of support, and the carriage be therefore prevented turning round the carrying-column, as shown in the drawings annexed.

2. The combination of parts, in frames or stands, for boring or cutting-engines, of a pivoted saddle or bow, with collars, columns, and arms, with their clamping arrangements and moving-gear for allowing the engine to be moved into any required position, substantially as and for the purpose herein described, and shown in the figures.

3. The combination, with frames or stands for boring-engines, of reservoirs, and a tank for water, having the necessary inlets and outlets, substantially as and for the purpose herein described, and shown in figs. 1 and 8.

4. The combination of parts of frames or stands, to be employed in sinking vertical shafts, substantially as herein described with reference to figs. 6 and 7.

72,513.—APPARATUS FOR DIGGING PEAT.—James B. Lyons, Litchfield, Conn.

I claim, 1. The clasping-fork or scoop H, as constructed, for digging and elevating peat from the bed.

2. Also, the boom D, supported on a truck *d*, and circular rail E, for the purpose of raising peat and delivering it, so as to be easily removed for use.

3. Also, the peat-digging apparatus, as attached to the vertical shaft, in combination with the boom, derrick, rope or chain, pulleys and windlass, operating substantially as herein specified

4. Also, the arrangement and combination of the eccentric-cam *k*, rod *n*, bell-crank *m*, and handle *l*, for controlling the digging and delivering apparatus, substantially as and for the purposes set forth.

72,579.—MANUFACTURE OF IRON AND STEEL.—Henry Kinnaird York, Cardiff, Great Britain.

I claim a new mode of decarbonizing cast-iron. The making of cast steel by the mixing of particles of cast iron decarbonized with certain proportions of a compound, consisting of iron, carbon, and manganese, such compound being found in white cast iron, known by the name of "*Spiegel eisen*;" or, by the mixing of particles of cast iron, decarbonized, as before described, with the same cast iron, not decarbonized, or other cast iron containing carbon, in the manner hereinbefore set forth.

72,626.—AMALGAMATOR FOR ORES OF GOLD AND SILVER.—William M. Fuller, Chicago, Ill.

I claim, 1. The application of a siphon to an amalgamator for producing a continuous current through the mercury, substantially as specified.

2. The siphon or pipe D, in combination with the cylinder A, substantially as and for the purposes herein specified.

3. The shaft E, in combination with two or more plates, F and G, substantially as specified.

4. The combination and arrangement of the shaft E, collar H, cone G', and mouth O, or end of pipe C, substantially as described.

5. The pipe L, when attached to the pipe D, substantially as and for the purposes described.

6. The tub B, pipe C, and cylinder A, in combination with the pipe D, substantially as specified.

72,649.—MACHINE FOR CHANNELLING ROCKS, &c.—Roger W. Love and Albert Ball, Windsor, Vt.

We claim, 1. In a rock-channelling machine, constructed substantially as described, the wheels O and N on the shaft S, operating in connection with the wheels or gears which rotate or revolve the drills or cutters, substantially as shown and set forth.

2. In a rock-channelling maching having rotating cutters, the devices for stopping, and also for reversing the feed apparatus, either automatically or by hand, substantially as described and for the purpose set forth.

3. In combination with the yoke and drills, the anti-friction rollers, constructed and applied as set forth.

4. Also, the devices for moving and fixing the carriage or machine, when constructed with stops for giving limited and regulated motion to the carriage, substantially as set forth.

Special Scientific Brevities.

☞ Mr. Bazalgette described before the British Association at Dundee his plan for supplying trustworthy topographical information to all classes of tourists. On reaching summits in England commanding extensive views there seems to be difficulty in obtaining trustworthy information regarding objects brought within the field of the telescope. He proposes to supply such information by means of a local indicator, consisting of a circular table of stone or metal engraved with radial lines pointing in the direction of any object of interest. Upon the line would be engraved the name of the object, its distance from the point of view, and, in case of mountains, their height above the sea. A table three feet in diameter would be sufficient to embrace a district of thirty miles. To facilitate reference, concentric lines representing distances of five miles would be engraved; and beyond the outer circle might be placed maps of cities, cathedrals, etc., beyond the distance of 30 miles. In the centre of this table is to be placed the telescope, and the whole is to be covered with a light ornamental building, so arranged as not to obstruct the view.

☞ Even in our most populous cities much more space is allotted to each individual than is ordinarily believed. Over-crowded London allows one square acre of land to every forty of its inhabitants. New York averages fifty-six persons per square acre; Philadelphia only seven; Boston, previous to its late enlargement, was the most crowded city in the United States, but every fifty-nine of its inhabitants, possessed on an average, one square acre of land. Taking the area of all the States, and apportioning it out to the population thereof, it appears that every seventeen inhabitants have one square mile at their disposal, while in the territories there are four square miles to each inhabitant. In the year 1865, Belgium, England and Wales, and France, had three hundred and ninety-seven; three hundred and sixty-seven; and one hundred and seventy six inhabitants to the square mile respectively. If the United States was as densely populated as the former of these three countries, its inhabitants would number, 1,195,000,000, which is a little difference of one hundred and eleven millions of people, above the entire population of the world.

☞ Mr. A. E. Fletcher exhibited at the British Association his instrument for measuring the speed of air in flues and chimneys. It is constructed on the principle first fully illustrated by Thomas Ewbank of New York, which was many years after applied by Giffard of France, in the construction of his injector, viz.: that the rapid current of a fluid draws in the same direction any other fluid in connection with it. Mr. Fletcher places in the flues straight tube in direction of the current of air, and in connection with it a tube bent, so as to face the current; both are connected with a column of ether, and the difference in the pressure in each will be indicated by the height of the ether in the graduated column, which measures the force of the current in the flue. The same instrument, with a slight modification, may be used as a wind-gauge.

☞ A new industry has lately been introduced into Glasgow—that of polishing granite, an art for which Aberdeen has long been noted. The works established near Pollockshields by the Scottish Granite Company are now employed in the preparation of eight polished granite columns for the piers of the new Blackfriars Bridge. One of these immense monoliths is already in an advanced state of its progress. It is perhaps the largest block of granite that has ever been wrought into a polished column in Scotland. It is about 7 feet in diameter, and about 11 feet in length; and four of the number are to be about 8 feet in diameter and 12 feet high. The material is the beautiful red syenitic granite of mull.

☞ Dr. Pecholier avers that a milk diet, if strictly adhered to, will relieve a person afflicted with certain forms of heart disease. Under the influence of this diet the impulse of the heart diminishes, together with the palpitation, and the congested condition of the face, the brain and the lungs. The patient experiences unexpected improvement, and by the adoption of this plan, life may be prolonged, even in cases where a permanent cure cannot be hoped for

On-dit about Minerals, &c.

☞ The London *Mechanic's Magazine* has the following: The total weight of the copper and brass exported from the United Kingdom in September, was 72,224 cwt., as compared with 59,070 cwt. in September 1866, and 61,863 cwt. in September, 1865. In this total, copper figured for 54,269 cwt., as compared with 44,871 cwt in September, 1866, and 41,532 cwt. in the month of September, 1865. The total exports of copper and brass to September 30, of this year, amounted to 556,933 cwt, as compared with 472,560 cwt. in the first nine months of 1866, and 512,446 cwt. in the first nine months of 1865. In these totals copper figured for 392,590 cwt., as compared with 623-497 cwt., to the corresponding date of 1866, and 332,563 cwt. to the corresponding date of 1865. British India appears to be a large consumer of our copper, having taken 206,336 cwt, to September 30, this year, as compared with 143,936 cwt. to the corresponding date of 1866, and 143,393 cwt. to the corresponding date of 1865. The value of the copper and brass exported in the first nine months of this year was £2,296,261, as compared with £2,203,021 to the corresponding date of 1866, and £2,388,989 to the corresponding date of 1865. In these totals copper figured for £1,583,132, £1,467,911, and £1,752,652 respectively. British India appears likely to pay the mother country something over $1,000,000, for copper this year.

☞ A great deal of interest is felt just now in St. Louis, in the iron manufacture. Several public meetings have been held and the successful results from making iron from some rich coal in Illinois, much commented on. They are inviting capitalists to erect more furnaces, set up rail-mills, and make St. Louis the largest iron manufacturing city in our country. The great iron deposits near Pilot Knob, have only been partially developed, on account of the want of capital, as well as proper facilities for bringing the ore to market. The new buyers of the St. Lonis and Iron Mountain railroad, have put that road in fine order, and are rapidly extending it to the river, opposite the terminus of the Mobile and Ohio, so that the ore can be sent both ways, and passengers for the south can go direct to New Orleans by rail, without change of cars. It is said that scarcely an instance can be shown where forty-two miles of road have been well graded and iron commenced to be laid, all in about four months. The connection will be made, it is thought, in twelve months, with the Southern roads.

☞ The Adirondack Iron company filed its certificate of incorporation with the Secretary of State of Ohio on Wednesday. The business of the company is the mining and manufacturing of iron ore and other minerals. The incorporators are William Bingham, George Worthington, Truman P. Handy, John Outhwaite, and Toomas M. Kelly, of Cleveland, Ohio, and Richard Reamington, of New York City. The capital stock is $750,000, and the principal office is located in Cleveland.

☞ The artesian well at Passy, near Paris, is probably the largest well of the kind that has ever been sunk. It is carried through the chalk into the lower green sands, which were reached at a depth of 1,923 feet, the bore finishing with a diameter of two feet. The well at first brought upward of five and a half million gallons a day to the surface of the ground, but the yield has since fallen off to about four million gallons a day. The work occupied seven years in construction, and was completed in 1861, at a cost of £40,000.

☞ From the Cobalt mines at Cobalt, in Chatham, Connecticut, several fine specimens of agate have been obtained.

☞ The development of the coal mines in the Western Reserve, Ohio, is causing a rapid growth of manufactories in that pleasant region.

Special Notices.

Books.

The motives which induce reading vary with the characters and tastes of the readers. With one class the chief design is to while away time, which is felt to hang heavily on their hands; with a second it is relaxation and refreshment after exhausting exertion; with a third the pleasure which the exercise affords; with a fourth the gratification of an artificial appetite for excitement; while there are others, whose aim is self-improvement, by way of preparation for usefulness. The world is full of books of all descriptions, from the bulky and compendious encyclopœdia, down to the cheap and trashy novel so eagerly read by those who seek only for emotional feelings. There are at the present day books on science, manufactures, trades, and industrial arts in general, besides many thousand historical, biographical and miscellaneous works. The books considered, or accepted, as standard works are doubtless eminently valuable and useful in all communities and to all classes of society. A reliable encyclopœdia, dictionary or gazeteer is as useful for reference in the countinghouse of the tradesman as in the study of the ecclesiastic or professor.

Such works as Ure's Dictionary of Arts, Manufactures, and Mines; Webster,s and Worcester's dictionaries are found in every American library, public and private, and on the table of almost every merchant, journalist and student. Take but one of the three mentioned, Webster's dictionary, we find it in an abridged and unabridged form, in all varieties of binding, from sheep, with marble edge, up to costly Turkey morocco, with gilt edge. We find in it beautiful illustrations, comprehensive explanations, and everything which makes a dictionary most valuable as a work of reference. Every variety of this admirable work can be procured from Tibbals & Company, 37 Park Row, New York.

The rooms of this firm are always stocked with a fine collection of standard works. His assortment of sacred and theological writings are at this season of the year more than usually interesting. To the theologian, student or reader of good literature, this repository of books proves a favorite resort.

English Cannel Coal.

We were shown, a few days since, a superior quality of English cannel coal, at the office of Parmelee Brothers, No. 32 Pine street. Parties desirous of enjoying in their parlor grates the most cheerful and economical of fires, should not fail to examine this coal. We understand that it is shipped directly from George Wright and Co., of Liverpool, and can be had at retail at 10 Union square (East), at very reasonable terms.

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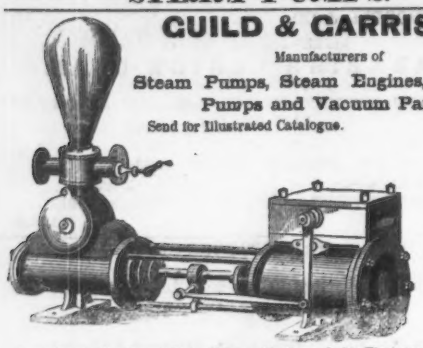

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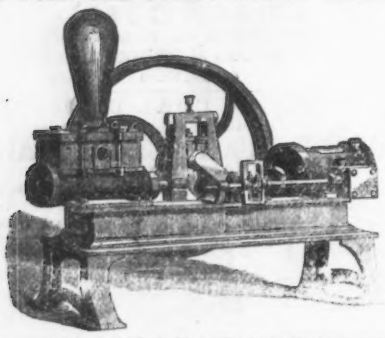

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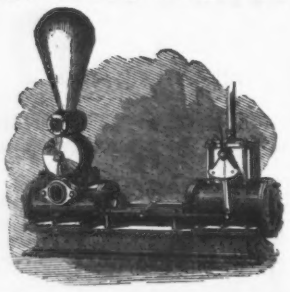

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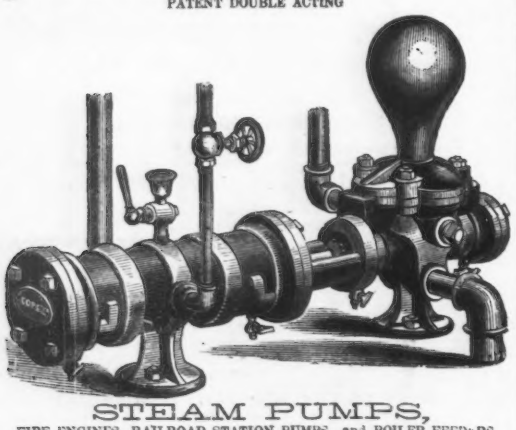

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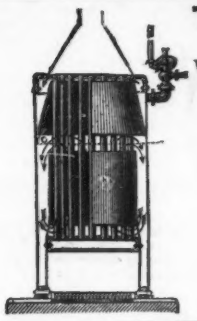

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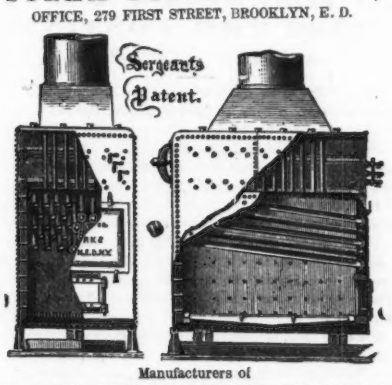

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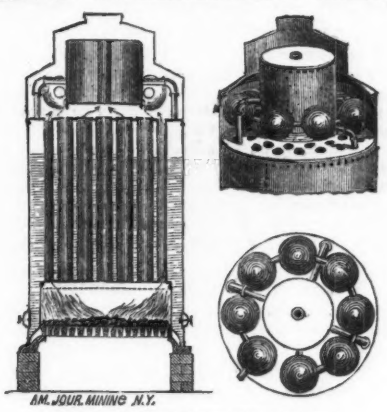

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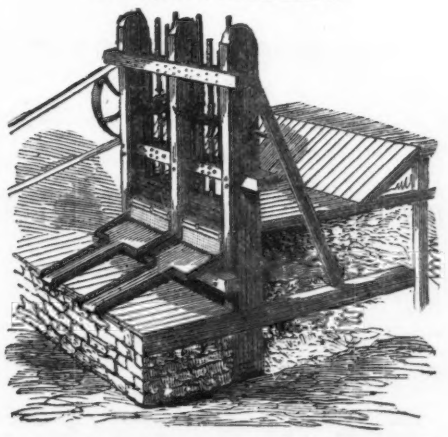

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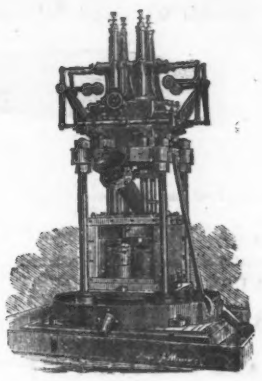

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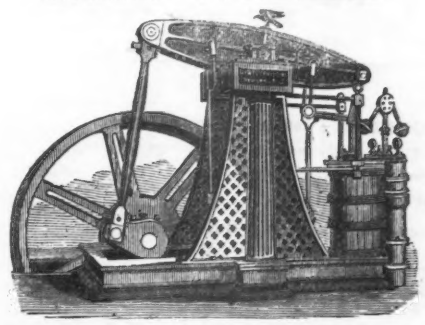

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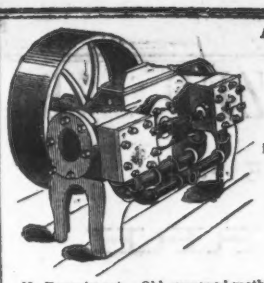

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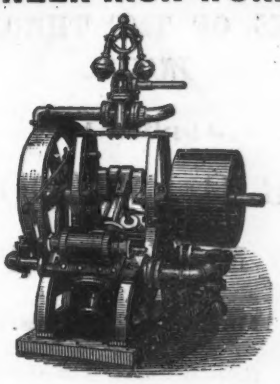

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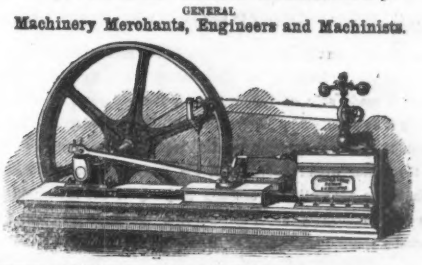

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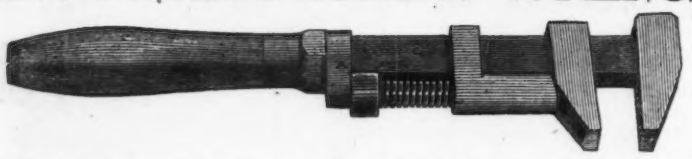

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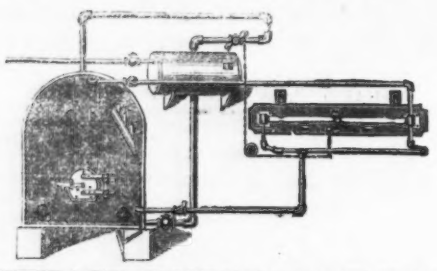

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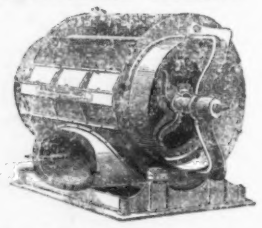

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NOTICE

HIKO, August 24, 1867.

CHARLES SCHENK, a resident of Pah-Ranagat Silver Mining District, and County Surveyor of Lincoln county, Nevada, begs leave to inform the mining public, that he is able and ready to give true and valuable information abou mining property in this District.

CHARLES SCHENK, M. E.

References—Wm. A. Smith, Esq., 25 and 27 Nassau street.
Prof. Harper, New York, etc. oct12, '67:'68

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UNION PACIFIC RAILROAD,

Running West from Omaha

ACROSS THE CONTINENT,

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This brings the line to the eastern base of the Rocky Mountains, and it is expected that the track will be laid thirty miles further, to Evans' Pass, the highest point on the road, by January. The maximum grade from the foot of the mountains to the summit is but eighty feet to the mile, while that of many Eastern roads is over one hundred. Work in the rock-cuttings on the western slope will continue through the winter, and there is now no reason to doubt that the entire grand line to the Pacific will be open for business in 1870

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A NEW PAMPHLET AND MAP, showing the Progress of the Work, Resources or Construction, and Value of Bonds, may be obtained at the Company's Offices or of its advertised agents, or will be sent free on application.

jan11:2t **JOHN J. CISCO, Treasurer, New York.**

UNION PACIFIC RAILROAD CO'Y.

NOTICE.

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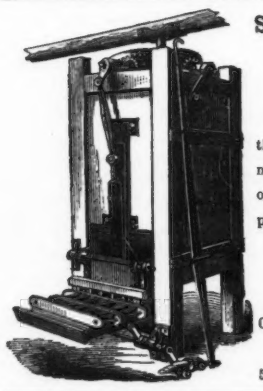

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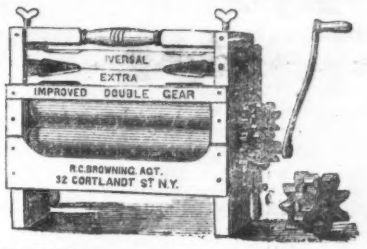

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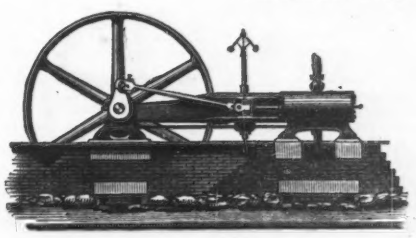

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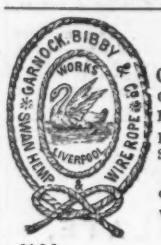

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PROSPECTUS.

EL CORREO HISPANO-AMERICANO;

A Journal of Commerce, Agriculture, Mining, Mechanics, Railway Enterprise, &c., especially devoted to the interests of the Spanish American States. issued the 1st, 10th and 20th of Every Month.

The much-to-be-regretted absence of adequate commercial intercourse between the Northern and Southern continents of America is mainly to be attributed to two causes. The first of these is the lack of proper information, among the industrial and agricultural classes of the Spanish American Republics, concerning the facilities and advantages offered by the manufactures of the United States; and the second is the entire absence of direct communication between the producers of this, and the consumers of those nations; while those who are really aware of the favorable opportunities here offered are deterred from availing themselves of such advantages by the fact that the expense of importations is not infrequently tripled or quadrupled by the passage of merchandise through three or four hands before reaching its final destination. England and France have commanded hitherto the markets of South America for all kinds of manufactures, while the United States, excelling in almost every department, and offering in addition the inducement of low prices, have enjoyed but a small share of the trade. Few manufacturers in this country are aware of the vast extent and profitable nature of this commerce; but the conviction of this fact is rapidly making itself felt; and there is urgent inquiry for the proper means of turning this tide, which now flows to Europe, towards the shores of the Northern Continent. The possible acquisition by the United States, at no remote day, of an important foothold among the Spanish American islands gives the subject at the present time great additional importance. Our naval supremacy in those regions should be accompanied by the commercial supremacy which it is chiefly useful to defend.

The best and surest means to this end is to furnish the Spanish American consumer with full and accurate information regarding the commerce, manufactures, mechanical arts, mining, metallurgy, railways, &c., of this country, setting forth in these departments our superiority to the nations of the Old World, and explaining the advantages offered in our markets.

Our conviction of the usefulness of such a step, based upon long and careful examination of the subject, and thorough personal acquaintance with each one of the Republics in question, their resources, interests and requirements, has received, of late, additional confirmation from communications addressed to us, as Publishers of the AMERICAN JOURNAL OF MINING, by prominent and influential citizens of Mexico and the other Hispano-American Republics, pointing out the expediency of either translating our Journal into Spanish, or publishing a periodical in that language for circulation in those countries. These gentlemen have urged us to put the plan into immediate execution, and promised us their influence and personal support.

We have therefore resolved upon the issue of "EL CORREO HISPANO-AMERICANO," for the purposes set forth above; and we feel assured that the nature of the Journal itself, together with the facilities we possess for its publication, and the patronage already spontaneously offered and secured, will render it not only the best medium of publicity for the manufactures of the United States, but one which cannot be superseded in point of universal circulation, efficiency of advertising, and economy of terms.

It will at once be evident, that the "CORREO HISPANO-AMERICANO" will not, like newspapers in general, depend upon partisan or political beliefs for its popularity. Politics having no place in its columns, it will have no rivals, will be free from all shackles of party spirit or interest, and will be welcomed in all circles and by all classes as a real friend, the bearer of useful information on matters of vital interest to all. Hence, it cannot come into competition with political journals of the day.

Besides the matters of value to the Spanish American reader already enumerated, the CORREO will contain the most complete market reports, including the prices of all crude and manufactured materials in the production, exchange, or consumption of which its subscribers are interested. As the day of publication coincides with the sailing of the Pacific Mail Steamer, these reports, corrected to the last moment before going to press, will afford the very latest information which can be obtained, surpassing, in this respect, all other periodical bulletins of prices current.

We would respectfully submit the following facts for the consideration of

ADVERTISERS:

Our terms for advertising are 25 cents per line for each insertion on inside pages, and 40 cents per line for each insertion on the outside.

We feel confident that this tariff will meet the approbation of all concerned; and to those who have already advertised in the columns of South American papers, the difference offered in their favor by the "CORREO" will at once be apparent, especially when they reflect that, in order to secure an adequate advertisement, covering the ground offered by our new Journal, the "CORREO HISPANO-AMERICANO," they must have recourse to the columns of all the principal newspapers in all the chief cities of each Island and Republic. Now, there are no less than *forty-seven* such newspapers, charging at an average rate 5¼ cents in gold (equal to say 7¼ cents in currency, at the present price of gold) per line for each insertion: that is to say, an advertisement of 10 lines costs for a *single time* $26.00 (gold), or $36,40 (in currency). The same advertisement in the "CORREO HISPANO-AMERICANO" costs but $2.50 in currency, and gives, besides, a superior medium of publicity, and also an incomparably wider circulation than can be reached through the above papers; for the "CORREO" will circulate where those, for political reasons, if for no others, can never go, namely, Spain. There too our Journal will be received as the welcome harbinger of useful and profitable information for all classes of society, and chiefly for the mercantile, agricultural and industrial communities.

Need we mention the benefit advertisers will derive also from the considerable circulation the "CORREO" will have in the United States? This we deem superfluous, and so, shall add no more to the incontestable advantages already enumerated.

We hope our friends and the industrial community generally will make all possible dispatch in handing in their advertisements, for the time is now short for translation, &c., before the publication of the first number, January 10th, 1868.

TERMS OF SUBSCRIPTION.

$5 per annum, payable invariably in advance. Single copies, 15 cents.

The above prices are of course exclusive of postage.

All communications relative to the "CORREO HISPANO-AMERICANO" are to be addressed to

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